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THE MILITARY ENVIRONMENT PRIMARILY IN RELATION TO CHANGES IN BAROMETRIC PRESSURE AS APPLIED TO CLINICAL MEDICINE

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LECTURE III:
FITNESS FOR THE MILITARY ENVIRONMENT

A consideration of the adverse factors in the military environment makes it apparent that a routine examination of the rested individual will not reveal his ability to withstand such debilitating agents as extremes in temperature and pressure, noise and vibration, unaccustomed motion, loss of sleep, muscular fatigue, and confinement in the sealed or partially sealed spaces aboard surface craft or in submarines, tanks, or underground fortifications. These forces tend to produce physical and psychic trauma that elicits basic traits in personality and conduct not apparent when the individual lives in a normal environment.

Although the medical officer cannot detect those subtle and elusive biochemical changes in the *milieu interieur* occurring normally, certain functional responses are amenable to measurement by the trained observer.

Our immediate interest lies in the determination of the amount of work or degree of extra effort that the individual is capable of without its bringing about permanent injury or breakdown.

In the study of high temperatures in relation to efficiency, conducted aboard ship several years ago, it was at first believed that psychomotor tests would reveal a linear decrease in performance. Much to our surprise efficiency was maintained at a high level despite the abnormal temperature environment, and naval personnel failed to perform their tasks satisfactorily only when physical collapse supervened (fig. 9). It appeared, however, that compensatory effort was a prime factor in maintaining efficient performance under the adverse conditions. The mental attitude and stability which underlie such effort therefore become our first concern.

Psychic Stability

In deep sea diving, for example, men inhibited by the narcotic action of compressed nitrogen work under a handicap that acts as a "load" on the nervous system. The stable diver at great depths will show an increased reaction time, but he will accomplish, or attempt to accomplish his task. The unstable individual, on the other hand, may ignore entirely his task when, at a depth of 250 feet, he finds himself endowed with personality and specialized ability that may be vocal, pugilistic, or narrative. He is in effect intoxicated and his functional value has been de-

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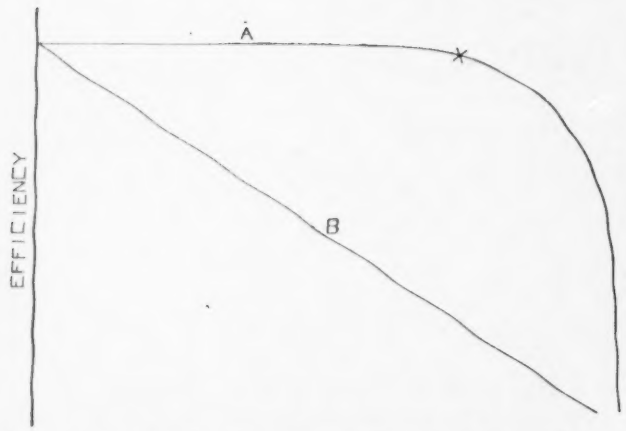

Fig. 9. Efficiency in performance of duties under the influence of adverse environments tends to be maintained by compensatory effort along curve A rather than B. An abrupt decline at X signifies physiologic breakdown.

stroyed by the suppression of a few of the higher centers of cerebration.

The problem of making an estimate of an individual's potential or actual ability is so complex that we can at this time indicate only an approach to the solution, which is essentially to record individual response to an adverse but controlled environment made possible by the employment of such instruments as the pressure chamber.

One may employ anoxia, for example, as a suitable stress to elicit compensatory effort. In the low pressure chamber the individual normal at ground level is subjected to an impairment similar to that associated with nitrogen narcosis.

Although complex psychic and somatic factors govern response to anoxia, our interest lies in the estimate of functional ability under controlled conditions. The decisive factor is whether or not the individual under reproducible conditions accomplishes outlined endeavor in an allotted time period.

Claustrophobia

If the present naval environment differs greatly from that of the last war, it is in regard to the necessity of confining men within small spaces. The maintenance of the water tight integrity of ships requires multicellular structure in which occupants are confined within limiting walls as closely as are nuclei in cells.

Although signs of claustrophobia may rarely be manifest under ordinary conditions, weeks and months of restriction may give rise to a series of emotional disturbances. If the factor of darkness is added to that of restriction, the combined stresses act to create a form of anxiety neurosis.

A suggestion as to a means of eliciting the claustrophobic tendency arose from the observation of men who wore rubber helmets excluding light. Unstable men could not tolerate the dark helmet, at least over a period of hours. The pressure chamber also serves to uncover this particular weakness, expressed as an obvious emotional disturbance and recorded in terms of elevated pulse rate.

Evaluation of Physical Fitness

The Teeth:

It is easy to overlook the obvious and fail to realize the importance that dentition plays in fitness for military duty. An examination of the dentition and state of oral hygiene is one of the oldest, quickest, and most reliable methods of appraising basic health and hygiene.

Employment of the Pressure Chamber in the Diagnosis of Aural and Sinal Infection:

Mention has already been made of the utilization of pressure chambers in detecting congestion and obstruction in auditory tubes and sinal passages. The ability to tolerate pressure at the rate of 30 pounds per square inch per minute—equivalent to diving to a depth of 66 feet—indicates freedom from acute and chronic or subclinical infection of the upper part of the respiratory tract. When one considers the prevalence of nasopharyngeal infection it may not be amiss to consider the chamber procedure as a presumptive test for general physical fitness.

Ten years ago, out of a group of 453 men, 59 or 13.2 per cent were unable to equalize pressure in one or both ears. Of the 59 disqualified men, 53 were found to have thickened and retracted tympanic membranes. Only 6 men with normal tympanic membranes were unable to equalize pressure.

At present about 6 per cent of the candidates for submarine escape training fail in the pressure test. The pressure chamber affords a means for a controlled test of these individuals.

The Altitude Tolerance Test:

In a group of divers some men will be more susceptible to "bends" than others. It is difficult to determine, even by an extensive physical examination, who the susceptible

individuals are. Consideration was, therefore, given to a test of fitness for diving based on actual decompression.

The removal of nitrogen from the tissues following a dive, without the development of manifest air embolism, appears to depend primarily upon blood supply in relation to body weight, or essentially upon effective blood flow through tissue. Cardiac output in relation to body weight, and the adequacy of collateral circulation would appear to be the important factors in preventing accumulation of air emboli sufficient in number to cause pain or fatigue.

Nitrogen removal is a function of cardiac output. Grollman has determined the relationship between surface area and cardiac output in the basal state. Small mammalian species with a comparatively large surface area in relation to body weight eliminate excess nitrogen so rapidly from their tissues that it is difficult to induce air embolism in these animals by exposure to high pressures. The rate of nitrogen transport in the dog, for example, is double that of man. The dog also tolerates a drop in pressure from 4 to 1 atmospheres, as compared with a drop from 2 to 1 atmospheres tolerated by man.

From empirical data age appears to be an important factor in any given species, the tolerance of young individuals being greater than that of older individuals. Chronological age may not be so important as physiological age. The amount of fat in the body is also a factor in altitude tolerance, but it is not so important as age.

Factors which tend to slow or damage the circulation increase susceptibility to air embolism. Divers engaged in test work, for example, refrain from alcohol for several days prior to a dive. In the history of caisson work some of the most severe injuries have been associated with poor physical condition brought about by previous ingestion of alcohol.

Although we cannot assign proper weight to the various factors that render some individuals more resistant to the development of air embolism than others, for our purpose a pressure test is of prognostic importance.

The decompression test can be conducted in a chamber in which the normal barometric pressure is lowered to simulate a climb of 5,000 feet per minute. The altitudes attained in the test procedure range from 30,000 to 40,000 feet.

Although a great deal is yet to be learned from such tests, valuable data for the classification of divers and aviators have already accumulated. Divers who descended to a depth of 440 feet in the open sea in connection with a recent submarine disaster had previously been tested and found relatively resistant to bends during exposure to a simulated altitude of 40,000 feet.

What remains to be determined is the value of the test as an index of general physical fitness. Does freedom from symptoms following a rapid decrease in pressure sufficient to liberate potential gas emboli throughout the body indicate a basic superiority in terms of cardiac output and effective blood flow through tissues?

Cardiovascular Response and Endurance:

Turning now to a less spectacular form of examination, we may consider a most valuable and readily available index of fitness —namely, the pulse rate recorded uniformly and under controlled conditions.

Since the last war the Schneider index, based essentially upon response of blood pressure and pulse rate to postural change, has proved to be a valuable criterion of fitness in the military service. Frequently, however, the Schneider procedure cannot be carried out precisely aboard ship or in the field.

The objective is to devise a simple, uniform test procedure that measures pulse rate response to a moderate amount of exercise, and physical fitness in terms of muscular endurance.

For the evaluation of cardiac response the exercise chosen conforms closely to the habitual performance of climbing steps. It consists of twenty step-ups on a platform eighteen inches high, performed during a period of thirty seconds. Pulse rates are recorded before exercise, with the subject sitting at rest (A), five to twenty seconds after exercise (B), and one hundred and twenty to one hundred and thirty-five seconds after exercise (C). The cardiovascular score is computed from the expression $B-70+3(C-A)$, according to which the elevation of pulse rate after exercise and the degree of recovery in pulse rate govern the score. The score is rated in the following manner: below 51, good; 51 to 74, fair; and above 74, poor. A good score is not likely to be obtained unless the pulse rate returns to the initial level

within two minutes after exercise. What we are attempting to find out is pulse rate response to *moderate exercise* of an amount such that 50 per cent of men in the military service will obtain good scores.

For the estimation and scoring of muscular endurance, the length of time that the standard exercise can be maintained is recorded in seconds. The pulse rate taken after this endurance exercise serves to indicate the degree of effort put forth. *It is not used* in the computation of the score.

When these procedures were used to ascertain the results of a three months' program of cadet training, it was observed that there may be no striking improvement in cardiovascular score. Muscular endurance time, however, is proportional to the amount of training. At the Pre-Flight School of the University of North Carolina the average endurance time of the cadets increased during one series of observations from 125 to 432 seconds.

The cardiovascular score serves to regulate the training work load, which is adjusted to prevent adverse cardiovascular effects as determined by the pulse rate.

For a general estimate of fitness in terms of a numerical score Lieutenant (jg) Nello Pace H-V(S), U.S.N.R. has expressed endurance time and cardiovascular score as a ratio to provide an index: $\frac{\text{endurance time}}{\text{cardiovascular score}} \times 10$.

This index serves essentially as an estimate of the fitness of the individual for physical effort. It should serve not only as a guide in a training program to increase muscular endurance but also as an indication of the stamina of the man in the field, and the fitness of the convalescent for duty.

The following examples illustrate the recording and scoring procedure for this test.

Sitting Pulse Rate	Pulse Rate per Minute 5"-20" after exercise	Pulse Rate per Minute 120"-135" after exercise	Cardiovascular Score	Endurance Time	Step Index
70	120	70	50	120 sec.	24
74	132	82	86	94 sec.	11
62	128	74	58	100 sec.	18
68	128	76	76	42 sec.	6
80	112	82	42	55 sec.	15

The Specific Gravity and the Composition of the Body:

The fact that fat is a good solvent for gases has been a source of grave concern in the field of deep sea diving. Not only in diving but throughout the military service a single criterion of good physical condition might be the absence of excess bodily fat.

Although some excess fat may be beneficial in cold climates or for survival on a life raft, its presence in tropical or semitropical regions tends to act as a "pack load" leading to earlier fatigue and increasing the nutritive requirements in terms of calories.

The problem is to determine what constitutes an individual's proper weight. The standard height-weight tables serve as a guide, but individual variations, especially among big men, serve to make estimates of obesity unreliable if weight is considered solely in relation to body height.

If we are interested in ascertaining the solidity of individuals and the quality of tissue, then there is perhaps no better method than the determination of the relationship between the weight and the volume of bodily substance, or the measurement of the specific gravity of the body as a whole.

This study of tissue density has a naval aspect, in that the volume of the body is estimated on the basis of Archimedes' principle, which states that a body wholly immersed in a fluid is lightened by an amount equal to the weight of the fluid displaced. Hence, the body weight lost in water measures the volume of the body.

The loss of weight in water is actually determined by weighing an individual submerged in water. A correction for the amount of air in the lungs at the time of weighing permits an accurate estimate of tissue density. Fat, possessing the lowest density of any of the body substances, tends to make an individual float. Conversely, lean men tend to sink.

An example of the method of computing specific gravity is given in table 1[1].

Table 1.—Example Illustrating the Method of Computing Specific Gravity[1]

		Pounds	Kilograms
Weight of the body in air		183.00	83.20
Weight in water, full inspiration		14.20	6.45
Weight in water, complete expiration		23.20	10.55
Vital capacity computed from the volume of water displaced	4,090 cc.		
Vital capacity by spirometric measurements	4,150 cc.		
Volume of residual air	1,200 cc.		
Weight of abdominal belt		13.75	6.25
Corrections			
Gross weight in water		23.20	10.55
Weight of belt		13.75	6.25
Weight in water, not corrected for residual air		9.45	4.30
Correction for residual air (1,200/458)		2.65	1.20
Net weight in water		12.10	5.50

$$\text{Specific gravity} = \frac{\text{Weight}}{\text{Volume}} = \frac{183}{170.9} = 1.071$$

Table 2.—Specific Gravity in Relation to Weight, Age, Height and Measurements of Thoracic and Abdominal Circumference[1]

Specific Gravity	Number of Men	Average Weight		Range, Pounds	Average Age	Average Height		Average Circumference				Average Difference, Inches	Difference, Range
								Chest		Abdomen			
		Pounds	Kg.			Inches	Cm.	Inches	Cm.	Inches	Cm.		
1.020-1.029	2	233	105.9	221-245	34	68.9	175.0	41.5	105.4	41.6	105.7	—0.1	—0.75-0.50
1.030-1.039	2	187	85.0	174-200	48	71.0	180.3	36.7	93.2	35.9	91.2	0.9	0.75-1.00
1.040-1.049	4	166	75.4	145-184	31	66.9	169.9	38.0	96.5	33.7	85.6	4.2	3.00-5.25
1.050-1.059	20	171	77.7	126-208	33	69.3	176.0	37.2	94.5	33.0	83.8	4.2	1.00-7.25
1.060-1.069	23	158	71.8	131-202	24	68.1	173.0	35.6	90.4	30.3	77.0	5.2	3.25-7.00
1.070-1.079	27	153	69.5	131-199	26	69.4	176.3	35.7	90.7	30.0	76.2	5.6	2.50-8.50
1.080-1.089	14	148	67.3	130-164	24	69.4	176.3	35.7	90.7	29.7	75.4	6.1	2.75-7.75
1.090-1.099	7	140	63.5	125-163	23	69.9	177.5	35.5	90.2	28.6	72.6	6.9	5.25-8.25

Values for the specific gravity of healthy naval personnel range between 1.020 and 1.099 (table 2)[1]:

From the data in table 2, however, it is not certain whether weight itself or obesity is the factor chiefly determining the specific gravity of the body. The lower the value for specific gravity, the higher the body weight. It was, therefore, necessary to examine a group of heavy but lean men. Such individuals are not prevalent, but if they were to be found anywhere it would be in professional football.

An outstanding group of players, the majority of whom had been selected for All-American football teams, were available for study in Washington, D. C.

The average specific gravity of this select group of men was 1.080, but their average weight was 200 pounds—43 pounds above the naval average for a corresponding specific gravity (table 3)[2].

Of interest in connection with these measurements is the fact that the lean, small man and the lean big man had an index in common—namely, a difference of about 7 inches between the circumference of the chest and that of the abdomen (fig. 10). By contrast, in the occasional fat man examined, the abdominal measurement sometimes exceeded the chest circumference. It was concluded that such men may be adapted for flotation but certainly not for deep sea diving.

The Composition of the Body

From these studies one may form a concept of the composition of the body. In the following schematic representation (fig. 11) the body may be looked upon as comprising essentially a lean mass of relatively constant composition, consisting of 75 per cent tissue, 15 per cent bone, and 10 per cent essential fat. The specific gravity of this lean mass may be computed as 1.099, or a value of about the same as that obtained for the leanest man.

If to the essential body mass a layer of fat is added comprising 10 per cent of the body weight, the specific gravity of the combined mass is 1.080, or the average value for the high group of naval personnel and for the football players (table 3). If a second layer of fat is added comprising 20 per cent of the body weight, the corresponding value for specific gravity is 1.062, or the average value for the middle group of naval personnel (table 3). Finally, if fat accumulates to form a third layer so that the excess tissue amounts to one third of the body weight, then the specific gravity is lowered to 1.036.

Table 3.—Low, Intermediate and High Specific Gravity Group Values in Relation to Weight and Circumferential Measurements[2]

No. Men	Average Specific Gravity	Range	Average Weight		Circumference				Difference, In.	Average Height	
					Chest		Abdomen				
			Lb.	Kg.	In.	Cm.	In.	Cm.		In.	Cm.
					Naval Personnel						
13	1.051	1.035-1.057	172.3	78.6	37.6	95.5	33.1	84.1	4.5	68.2	173.2
24	1.066	1.060-1.074	156.9	71.3	36.1	91.7	30.6	77.7	5.5	68.5	174.0
38	1.086	1.075-1.096	156.9	71.3	36.5	92.7	29.7	75.4	6.8	69.4	176.3
					Trained Athletes (Professional Football Players)						
25	1.080	1.051-1.097	200.6	91.2	40.0	101.6	33.1	84.1	6.9	72.1	183.1

1. Behnke, A. R., Feen, B. G., and Welham, W. C.: The Specific Gravity of Healthy Men, J.A.M.A. 118:495-498 (Feb. 14) 1942.

2. Welham, W. C. and Behnke, A. R.: The Specific Gravity of Healthy Men, J.A.M.A. 118:498-501 (Feb. 14) 1942.

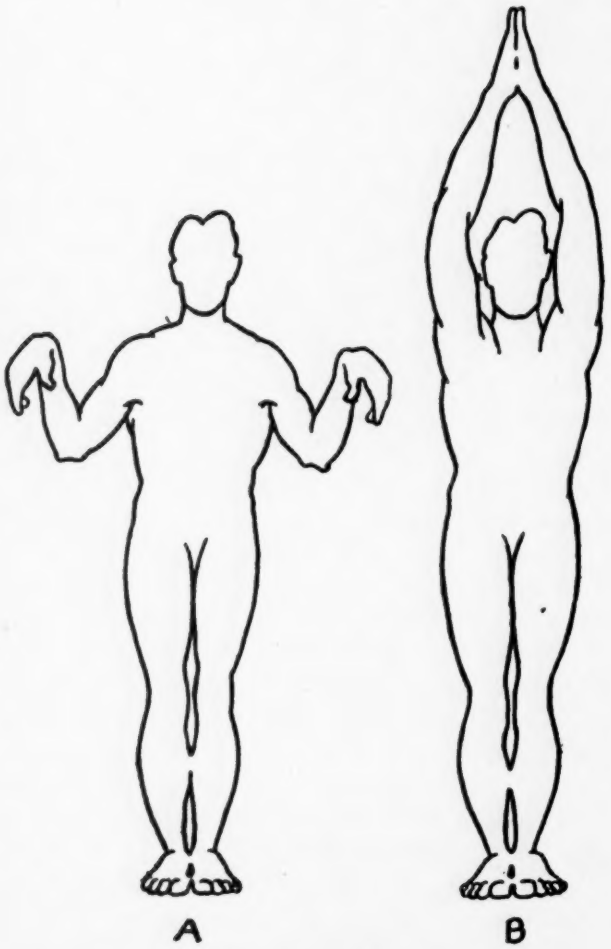

Fig. 10. A represents the position assumed by the subject for measurements of anteroposterior and lateral chest diameter. The measurements were taken at the level of the nipple line. B represents the position assumed for measurements of the circumference of the chest and abdomen. The latter measurements were taken at the level of the umbilicus.
From Welham and Behnke[2].

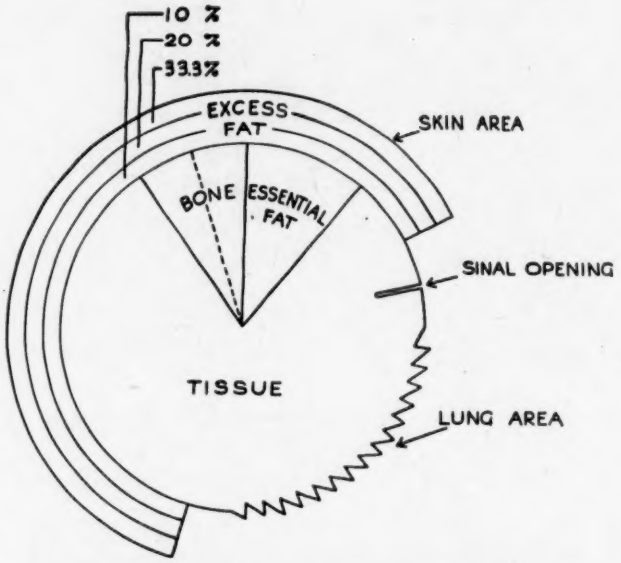

Fig. 11. Schematic representation of the body, showing the volumetric relationship between the excess fat and the true body mass.
The following data form the basis for the diagram:

Substance	*Specific Gravity*	*Weight % Total Mass*	*Volume % Total Mass*
Bone	1.560	15	10.5
Essential Fat	0.940	10	11.7
Tissue	1.060	75	77.8

Specific gravity of the true body mass=1.099

The addition of excess fat amounting to 10 per cent of total body weight reduces the specific gravity of the true body mass from 1.099 to 1.080; 20 per cent additional fat lowers the specific gravity to 1.036.
From Behnke, A. R.: Physiological Studies Pertaining to Deep Sea Diving and Aviation (Harvey Lecture) Bull. New York Acad. Med. 18:561-585 (Sept.) 1942.

The Maintenance of Good Physical Condition

Two groups of men require particular attention. The first group is composed of recruits, especially those men under 21 years of age. These young men still in the growth period may be underweight, and their resistance to communicable disease low, especially if they come from areas where they have not acquired the immunity that develops during close association in the training station. Essentially their regimen must comprise a carefully supervised schedule in which adequate rest and the ample naval diet are important factors. That these principles are in effect in the Navy is evident from the gain in weight, the betterment in health, and the will to accomplishment exhibited by these young men at the end of their first year of service.

The second group that require medical supervision are men over 30 years of age. These men are prone to develop excess weight, and the removal of fat must be carried out by the judicious regulation of diet and usually an extra serving of exercise.

The intermediate group between 21 and 31 years of age is potentially able to engage in a strenuous training program which changes the sedentary individual into an efficient fighter.

The conditioning of men for arduous duty is best exemplified by the program of training conducted at the Navy Pre-Flight Schools for aviation cadets. In this program the principles of athletic competition serve to guide military efforts in the conditioning of men for modern warfare. These men are taught how to win in combat. In peacetime

the system of American athletic competition developed not only stamina and fighting power but purposeful teamwork.

The older group of men who are not candidates for the training required for peak performance must be kept fit by sustained but moderate activity, attaining thereby a durable efficiency on a level devoid of either excessive peak performance or periods of staleness. In our experience such men have been kept in good condition by daily exercise in the form of games. Such exercise, combined with adequate fluid intake, has replaced the noon meal. To mitigate the complicating factor of hunger, reliance is placed on the mobilization of the glycogen stores from liver and skin by the circulating blood.

Thus, a twofold objective is accomplished. The exercise serves to maintain muscular tone and efficiency for required activity, and to replace oral feeding by the less costly parenteral sustenance obtained from the warehouse of reserve glycogen and fat.

Concluding Note

The veteran in the military service is performing his duties as expected, courageously and with initiative, in accord with American tradition. It is the example of youth, however, that leaves no doubt as to the outcome of the war. One needs no more assurance than to witness the transformation of the somewhat frail, homesick, seasick farm boy into a dynamic fighting machine that would engage the enemy with nothing more than a slingshot. The problem is to condition these young men and to afford all possible means of protection for them, so that victory will be achieved with the least expenditure of our most valuable possession.

The health of doctors living in hospitals is an important matter. It deserves careful consideration. Each medical student on graduation from his medical school should receive a card giving a complete report of his tuberculin test and roentgen examinations. Each hospital should make a rule to continue with this record by requiring chest films of its internes at six-month intervals. Large hospitals dealing with vast numbers of patients should go even further. They should require their internes and residents to have chest films at three-month intervals. If a rule of this sort were made general, tuberculosis in the resident staff would be recognized more quickly than it is at present, and unnecessary loss of time spent in treatment would be saved. Reginald Fitz, M.D., Jour. Amer. Med. Assn., Sept. 27, 1942.

ELECTRIC SHOCK TREATMENT OF MENTAL DISORDERS

HANS LOWENBACH, M.D.

DURHAM

> Diseases desperate grown
> by desperate appliance are relieved,
> or not at all.
> HAMLET, Act IV, Scene 3

History

The idea of using convulsions to treat psychotic patients was introduced by L. v. Meduna, in 1935[1]. He proceeded from the observation that convulsive disorders and schizophrenia (dementia praecox) rarely occur in the same person. Von Meduna assumed that the convulsions prevented a high incidence of schizophrenia among "epileptics" and that convulsions artificially produced in a psychotic patient might bring about improvement, if not complete recovery. He provoked convulsions by metrazol, a drug synthesized by Knoll to serve as an analeptic. Von Meduna's results were encouraging and enthusiastic reports soon came forth from psychiatric hospitals all over the world.

In 1938, Cerletti and Bini of Italy announced that they had treated mentally ill patients with convulsions induced by strong electric currents applied directly to the head[2]. That the passage of electric current through the brain causes generalized convulsions was, in itself, not a new discovery. During the first decade of this century Prevost and Battelli[3], two Swiss physiologists, had published the results of extensive animal experiments on this subject. In addition, the literature on electric accidents abounds with observations on the appearance of convulsions following electric exposure. Recently, by means of convulsions electrically induced in animals, Spiegel[4] and Merritt and Putnam[5] gained valuable information

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Based upon a talk made before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

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2. Cerletti, U. and Bini, L.: Un nuovo metodo di shockterapia "l'elettroshock", Boll. Accad. med. Roma, 1938, pp. 136-138.
3. Battelli, M. F. and Prevost, J. L. et al.: Travails du laboratoire de physiologie de l'universite de Geneve, mostly in C. r. Soc. Biol. Paris.
4. Spiegel, E. A.: Quantitative Determination of the Convulsive Reactivity by Electric Stimulation of the Brain With the Skull Intact, J. Lab. & Clin. Med. 22:1274-1276 (Sept.) 1937.
5. Merritt, H. H. and Putnam, T. J.: A New Series of Anticonvulsant Drugs Tested by Experiments on Animals, Arch. Neurol. & Psychiat. 39:1003-1013 (May) 1938.

on the effect of anti-convulsive drugs. Krasnogorski[6] used the same method to study the effect of convulsions on animal behavior. To the Italian authors, however, goes the credit for extending this knowledge to the treatment of psychiatric disorders of human beings.

Berkwitz[7] has enumerated early attempts to treat, or rather to intimidate, psychotics with electricity. These attempts, although of considerable interest to the medical historian, can not be compared directly to the procedure as practiced today.

Shortly after the original publication by Cerletti and Bini, psychiatrists in England, the Netherlands, Germany and Switzerland adopted the new method. In the winter of 1939-1940, Androp, Lyman and Lowenbach introduced this treatment at the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital in Baltimore. Soon reports appeared from many American sources.

Apparatus and Technique

The apparatus used to produce "electroconvulsions" is rather simple. The principle is that a transformer allows the city voltage to be varied between 0 and 140 volts. A time relay automatically closes and opens the circuit in which the patient is enclosed and exposes him to the flow of current for a time ranging from .1 to .5 seconds, according to choice and necessity. There are now several apparatus on the market. The instrument constructed and in use at Duke Hospital follows the principles first published by Spiegel[4].

The strength of the current flowing through the patient's head during the time of exposure varies according to circumstances. We are dealing with alternating current and with a biologic electrolytic conductor. The ordinary laws of electrolytic conduction do not apply[8]. It must suffice here to say that the effective current usually lies between 500 and 700 milliamperes, provided the initial impedance—that is, the electric resistance to alternating current—is less than 2,000 ohms. If the initial resistance is considerably higher than 2,000 ohms, the "shock current" may become very small and ineffective. On the other hand, currents up to 1,500 milliamperes have been used without untoward results. The electrodes, 5 cm. in diameter, are pressed against both temples. Electrode jelly is rubbed into the skin prior to the application of the electrodes in order to reduce the skin resistance to at least 2,000 ohms.

Treatments are usually given in the morning. Sometimes it has been found useful to treat a patient just before bedtime so that the post-convulsive relaxation may merge with the normal sleep. Before the treatment the patient is asked to empty his bladder and, if possible, his bowels. We prefer not to give treatments directly after a large meal, but in an emergency this circumstance would not preclude a treatment. The patient lies on a hard mattress with a pillow under the small of the back, to produce a slight opisthotonus. An effort is made to give just enough electric stimulation to produce a major convulsion. We therefore begin with 120 volts for .1 second, and change time or voltage according to results. There are no accurate data at present by which to predict the necessary voltage and time. It seems, however, that older patients generally need a larger stimulus than younger persons.

The Convulsion

Immediately with the closing of the circuit the patient loses consciousness. The convulsion which follows an effective electric stimulus greatly resembles an "epileptic" seizure. It begins with a deep inspiration, followed by an expiration through a spastic glottis. Usually the mouth opens wide. We prefer not to insert a mouth gag before the treatment, because many patients feel frightened by this. The gag is inserted when the mouth opens. In our practice, a piece of rubber tubing in the shape of a "V" is placed between the molars, preventing the tongue from being caught between the front teeth and also preventing injury to the front teeth.

The tonic phase is characterized by a rigid extension of the trunk while the arms are bent from the elbow, and the hands and feet assume a characteristic position of flexion and supination. At times, the tonic extension is preceded by a flexion of the body in which the head is raised from the horizontal and the knees are abducted and flexed upon the

6. Krasnogorski, N. I.: Convulsions Called Forth in the Dog by Conditioned Reflex Stimulation and the Resulting Psychoneurotic State of the Animal, Proc. XVth Internat. Physiol. Congr. 1935:239.
7. Berkwitz, N. J.: Faradic Shock Treatment of the "Functional" Psychoses, Journal-Lancet 59:351-355 (August) 1939.
8. Lowenbach, H. and Morgan, J. E.: The Human Skin as a Conductor of 60 Cycle Alternating Current of High Intensity, Studied on Electro-Shock Patients, J. Lab. & Clin. Med., in press.

abdomen, in a manner resembling a swimmer on his back. After about twenty seconds the clonic phase begins, with the familiar rhythmic "convulsive" jerkings. It lasts for another twenty to thirty seconds, during which the clonic movements gradually become less and less frequent. The whole convulsive reaction has a duration of forty to fifty seconds[9].

A "sub-convulsive" or "minor" reaction can be produced with a stimulus just below the one necessary to provoke a generalized convulsion. It consists of an immediate tonic reaction only, and the patient regains consciousness, at least partially, within fifteen seconds.

A generalized convulsion leaves a human being in a state in which all that is called the personality has been extinguished. Although the autonomous functions are operating more or less regularly, the individual does not react for a while to any kind of stimulus and the activity of the cerebral cortex as revealed by the electroencephalogram has almost completely ceased. This period is succeeded by a phase during which the higher functions return and in which the personality is reintegrated. The sub-convulsive reaction does not seem to differ from the convulsive except in degree, but in these minor reactions where the brain has not been completely exhausted, reintegration may begin at any level and the recovery may be much more quickly and indeed sometimes imperceptibly achieved[10].

Selection of Patients

Convulsive treatment was originally intended for patients suffering from schizophrenia. But it was soon found that not all the types of this disease responded equally well, and it became evident that the affective psychoses offered an even better field for success. It would lead too far afield to discuss here percentages and "exact" figures which are published from time to time. It has to be kept in mind that schizophrenia, for example, encompasses a number of mental disorders of perhaps widely separated etiology. It has to be realized that, especially in the initial stages of a mental disturbance, it is often difficult to attach a definite diagnostic label and that psychiatrists, even those trained in the same "school", may disagree about the ultimate diagnosis in terms of the standard nomenclature.

It is possible, however, to extract from the literature a trend of the impressions which, in the absence of "exact" figures, seems to point in certain directions. The following tabulation attempts to summarize this trend as it is consistent with our own observations.

Some Factors Influencing the Prognosis of Electric Shock Treatment:

Relatively Favorable	Relatively Unfavorable
Diagnosis:	
Involutional depression	Paranoid schizophrenia
Reactive depression	Paranoia
Depression in manic-depressive psychosis	Excitement in manic-depressive psychosis
Agitated depression	
Catatonic schizophrenia	Simple schizophrenia
Age at onset of psychosis:	
Above 35 years	Below 35 years
Duration of psychosis:	
Less than 6 months	More than 2 years
Up to 2 years (?)	
Type of Onset:	
Rapid	Insidious
Exogenic Precipitating Factors:	
Present	Absent
Bodily Type:	
Pyknic	Leptosomatic
Temperament:	
Extrovert	Introvert
Prepsychotic Personality:	
Stable, efficient, friendly	Unstable, suspicious, obsessive, "worrier"
Sexual Maladjustment:	
Absent	Present
Mental Deterioration:	
Absent	Present

In our practice, however, electric shock treatment is often administered when the above factors add up to an unfavorable prognosis. We feel, that, in the absence of definite criteria, we are not permitted to withhold opportunities from a patient on the ground of "impressions". This policy has frequently been rewarded by at least a partial recovery which allowed the patient to return to society and prevented permanent commitment to a state institution.

Only when severe deterioration of habits and intellectual function has been present for

9. It is interesting to note that the duration of the convulsive reaction is the same in animals like dogs, cats, rabbits, and rats. as it is in men and women. It seems to be a biological constant.

10. Lowenbach, H. and Stainbrook, E. J.: Observations on Mental Patients After Electro-Shock, Am. J. Psychiat. 98: 828-833 (May) 1942.

a long time do we feel justified in advising with conviction against convulsive treatment or refusing it if our advice is disregarded. Under those circumstances an attempt to improve the condition of the patient or to arrest the progress of his psychosis still should be made in the state hospital. This places no additional financial burden upon the family of the patient.

As non-psychiatric contraindications we regard myocardial damage with changes of the electrocardiogram, aneurysm of the aorta or of the cerebral vessels (previous cerebral vascular accidents), a systolic pressure above 200 (an arbitrary level), active tuberculosis, acute infections, and thrombosis or thrombophlebitis. We have treated without need of regret patients between the ages of 16 and 68, with blood pressures up to 200 and with weights up to 240 pounds. Successful treatments of women during pregnancy have been reported, with subsequent uncomplicated delivery of a healthy baby at term[11].

Malformation of the spine, severe arthritis, and osteoporosis precluded convulsive treatment until curare and drugs with similar action became available to prevent the full mechanical severity of the convulsive seizure. Since then, patients with spina bifida, previous vertebral fractures, and similar conditions can be subjected to the treatment[12].

The "Typical" Course of Treatment

A course of treatment consists of twelve to twenty electric shocks given two or three times per week. In our experience, improvement usually becomes apparent after the eighth treatment. We have seen it happen again and again that the first seven treatments produce no change in the patient's symptoms, but that after the eighth treatment, there is a decided turn for the better. We have no explanation to offer for this phenomenon. If a patient does not show signs of improvement after the eighth treatment, the chances are that he will not improve at all. From then on, the patient may recover rapidly and lose the delusions and other symptoms in the course of the next four treatments, or progress may be slow and more than twelve treatments may be needed. It has been suggested that treatment be stopped as soon as the main symptoms have disappeared, and that if necessary later on, one or two "sustaining" treatments be given. We do not approve of this procedure. Too often we have seen serious relapses occur after a short time of improvement when the patient was given less than twelve treatments. When treatment was started again, many more shocks were necessary to produce successful results.

Ambulatory treatment is possible[13], and we have used it when circumstances are especially favorable.

The "Confusional" Treatment

Each convulsive treatment is followed by a period of disorientation and mental confusion which gradually clears during the time of recovery from the "shock". When the next treatment is given two or three days later, the patient has regained his memory and it is only the convulsion and a period afterwards which is covered by total or partial amnesia. We gained the impression that those patients whose post-convulsive confusion lasted for a considerable time improved faster and with greater certainty than did those who became confused for a short time only. We also observed that patients who did not show any confusion at all and were able, a short while after the treatment, to recall name, date, and events, usually resumed immediately their delusions and subsequently remained unimproved. This impression was further strengthened by a remark of Myerson that he had to treat a patient until a state of amentia was reached before improvement became apparent[13].

Two years ago, therefore, we began to give what, for lack of a better name, we call the "confusional" treatment[14]. In this type of therapy the explicit purpose is to create a period of confusion lasting for many days. Twelve treatments given within twelve to thirteen days usually suffice. Definite confusion becomes manifest during the treatment, most markedly again after the eighth shock. Name, occupation, domicile, marital and domestic status, recent and remote circum-

11. Thorpe, F. T.: Shock Treatment in Psychosis Complicating Pregnancy, Brit. M. J. 2:281-287 (Sept.) 1942.
12. Bennett, A. E.: Preventing Traumatic Complications in Convulsive Shock Therapy by Curare, J.A.M.A. 114:322-324 (Jan. 27) 1940.
13. Myerson, A.: The out-patient electric shock treatment of manic-depressive psychosis. Read before the Amer. Psychiat. Assoc., Richmond, Va., 1941.
14. Dr. John F. Owen, Superintendent of the N. C. State Hospital, Dix Hill, Raleigh, collaborated extensively in this work.

stances of importance are completely forgotten by the patient during this time. Instead the patient is apathetic, "inert", shows no initiative, and has to be urged and coached to perform the simple tasks of personal hygiene, eating and elimination. The patient may sit for a long time in front of a meal, if left alone; but if urged to eat, he will do so, masticate well, and swallow. He has to be brought to the toilet, where he will urinate and defecate by himself, if constantly told to do so; if left alone, he may sit on the toilet for a long time without progress but also without discomfort. Thus the patient exhibits a type of behavior closely resembling that observed by Freeman and Watts[15] for some days after prefrontal lobotomy. In the majority of our cases gross neurological signs were absent during this treatment except for a fine tremor of the hands and lips. In a few patients neurologic signs (beginning aphasia, staggering gait, and excessive tremor) developed before mental confusion was definitely apparent. The treatment was interrupted immediately and the signs disappeared. None of these patients improved. Usually, however, mental confusion appears far ahead of neurologic symptoms[16]. When the confusion is complete, treatment is stopped. In the ensuing two weeks spontaneous activity and memory return. In the successfully treated cases, the symptoms of the psychosis which led to the treatment do not return with it.

Accidents and Their Prevention: Pathological Anatomy

Considerable pull and pressure are exerted on the bones and ligaments of the skeleton during a convulsion[17]. The spinal column in particular is placed under severe strain. Compression fractures of the vertebrae—notably of the fifth, sixth, and seventh thoracic vertebrae—, fractures of the humerus and the femur, dislocation of the shoulder joints, and tears in ligaments have been described in reports from numerous sources[18].

Fortunately electro-convulsions are less severe than those following injection of metrazol. Another advantage of the former agent is the fact that patients lose consciousness immediately when the "shock" is given. With metrazol many seconds are required before the concentration of the drug reaches the convulsive threshold. During this period, which he later may remember, the patient usually experiences severe anxiety and feelings of impending disaster. When the convulsion finally sets in, it begins in a body whose muscles are tense and whose joints are fixed. In contrast, the patient receiving electric shock experiences no anxiety and the convulsion begins in a relaxed body.

To forestall mechanical injuries, various measures, some of them rather complicated, have been advocated. It would exceed the scope of this short review to discuss in detail their advantages and disadvantages. We feel that most restraining procedures are unnecessary, if not directly harmful. It seems to us that it is better to allow the muscles and joints of the body to behave according to their own inherent mechanics than to add further strain through outside influences. The following precautions we have found to be valuable and sufficient:

When the indication for shock treatment has been established, an x-ray is made of the patient's spine. Should the roentgenogram reveal abnormalities such as malformation, more than moderate arthritis, or osteoporosis, the "shocks" are either carefully restricted to sub-convulsive reactions or the development of the convulsion is avoided altogether by the injection of curare[19]. In the absence of abnormal findings, the treatments are given in the manner already described. In our experience, the hyperextension of the back satisfactorily prevents excessive "jack-knifing" which may lead to compression fracture of the vertebrae. Enough experienced help is present to make sure that the patient does not harm himself during the time of the post-convulsive restlessness.

Post-convulsive asphyxia which required immediate intervention with artificial respiration and stimulants has been reported by

15. Freeman, W. and Watts, J. W.: Psychosurgery, Springfield and Baltimore, C. C. Thomas, 1942.

16. The process of bringing on confusion can be considerably speeded up by giving the patient four convulsions daily for three to four days, spaced three hours apart with twelve hours of rest in bed. Our experience is still too small to derive any conclusions from this form of treatment.

17. Charon, X.: Des fractures spontanees pendant les acces epileptiques, Ann. medicopsychol., 1899; quoted from Rev. neurologique 7:609 (1899).

18. Worthing, H. J. and Kalinowsky, L.: The Question of *Vertebral Fractures in Convulsive Therapy and in Epilepsy*, Am. J. Psychiat. 98:533-537 (Jan.) 1942.

19. We use, with full satisfaction, "Intocostrin," manufactured by E. R. Squibb & Sons.

Brill and Kalinowsky[20]. Fortunately, we have never encountered difficulties of this sort. Changes of the electrocardiogram following treatment have been described, but they were transitory in character.

Very little is known about anatomical alterations due to electric shock treatment. Of the twelve deaths reported in the American literature, some occurred several months after the last treatment and in persons of well advanced age. It remained a question whether or not the treatment had acted as a contributing factor. The other fatalities were caused by respiratory failure which developed immediately after an induced seizure. In those cases where permission for autopsy was obtained, fresh hemorrhages, perivascular damage, areas of recent necrosis in the cortex, in the hippocampus and in the medulla, and astrocytic proliferation were discovered and attributed to the passage of current through the brain[21].

Animal experiments, on the other hand, have demonstrated that lasting damage can be produced only with currents fifty to two hundred times above the convulsive threshold. The harmful effects consist of capillary and supra-capillary anemia with hemorrhages in the cerebral tissues. No significant and consistent pathologic changes are caused by shock doses comparable to those used in human treatment[22].

Electroencephalographic studies in animals and human beings revealed, however, that the cerebral electro-activity becomes irregular and finally abnormal during the course of treatment[23]. In some cases the pattern remains altered for a long time after treatment ends; in others it returns to its original form within a short period after the last "shock". This indicates physico-chemical changes which might escape histological detection. More systematic studies are required and are in progress.

20. Brill, H. and Kalinowsky, L.: Asphyxial Episodes and their Prevention in Electric and Other Convulsive Therapies, Psychiat. Quart. 16:351-356 (April) 1942.
21. (a) Alpers, B. J. and Hughes, J.: The Brain Changes in Electrically Induced Convulsions in the Human, J. Neuropath. & Exper. Neurol. 1:173-180 (April) 1942.
    (b) Ebaugh, F. G., Barnacle, C. H., and Neubuerger, K. T.: Fatalities Following Electric Convulsive Therapy, Arch. Neurol. & Psychiat. 49:107-117 (Jan.) 1943.
22. (a) Neubuerger, K. T., Whitehead, R. W., Rutledge, E. K. and Ebaugh, F. G.: Pathologic Changes in the Brains of Dogs Given Repeated Electrical Shocks, Am. J. M. Sc. 204:381-387 (Sept.) 1942.
    (b) Alexander, L. and Lowenbach, H.: Experimental Studies on Electro-Shock Treatment. With discussion by Drs. L. Kalinowsky, M. T. Moore and N. W. Winkelman, J. Neuropath. 1:444-446, (Oct.) 1942.
23. (a) Golla, F., Walter, W. G. and Fleming, G.W.T.H.: Electrically Induced Convulsions, Proc. Roy. Soc. Med. 33:261-267 (1940).
    (b) Lowenbach, H. and Lyman, R. S.: The Electroencephalogram in Electrically Induced Convulsions in Rabbits, J. Neurol. & Psychiat. 3:336-342 (Oct.) 1940.
    (c) Hughes, J., Wigton, R. and Jardon, F.: Electroencephalographic Studies on Patients Receiving Electric Shock Treatment, Arch. Neurol. & Psychiat. 46: 748-750, 1941.
    (d) Pacella, B. L., Barrera, S. E. and Kalinowsky, L.: Variations in the Electroencephalogram Associated With Electric Shock Therapy of Patients With Mental Disorders, Arch. Neurol. & Psychiat. 47:367-384 (March) 1942.

Summary

Electric shock treatment, in its typical and "confusional" forms, is a method of treating human beings ill with schizophrenia, paranoia, depressions and excitements of different categories, and anxiety states by convulsions electrically induced. If properly administered, it has few immediate dangers. It is convenient to the patient, who feels nothing of the treatment and has a complete amnesia for each convulsion and for some time before and afterward. It is easy for the physician to give. The cost of each treatment is a fraction of one cent, a point of importance for the budget of state hospitals and other public institutions.

Electric shock treatment, like other previous forms of convulsive therapy, is empirical, and the mode of action is as unknown as is the cause of the disease treated. In the vernacular, "we treat something we do not know what it is, with something we do not know what it does." Our justification is the great number of patients restored to health and happiness, who formerly were relieved either after a long period of helpless waiting, or not at all.

Too Much Medicine.—When things are not going well in the face of much drug or other therapy, try a rest day or two or three without any medicines at all (except in the case of essential rations like insulin)—every now and then the result is little short of miraculous in arousing a spark of life, of appetite, or of morale which had been dampened by the very drugs which perhaps at first or on occasion may actually be life saving. Life saving measures may prove too heroic for every day life and may eventually result in severe depression or worse.—Paul D. White: Fallacies in the Treatment of Heart Disease, New Orleans M. and Surg. J. 93:566 (May) 1941.

New Remedies in the Treatment of Coronary Disease.—Do not rush to try every new remedy suggested in the treatment of coronary disease with insufficiency . . . The old standbys of rest and the nitrites are still the best, although in a few instances aminophyllin and nerve injections do seem to help. Radical measures like total thyroidectomy and implantation of new blood supply have not proved their worth, nor has radiation of the adrenal glands. —Paul D. White: Fallacies in the Treatment of Heart Disease, New Orleans M. and Surg. J. 93: 569 (May) 1941.

DIABETES MELLITUS, WITH SPECIAL REFERENCE TO COMPLICATIONS INVOLVING THE FEET

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There are many methods of treatment of diabetes now in use in this country. Each has its active proponents. These differ in the kinds of insulin used and in the widely varying dietary procedures employed. In the matter of insulin there is the original standard, readily absorbable, rapidly acting material and the more recent protamine suspension which is slowly absorbed and more prolonged in action.

On the subject of diet there are several widely differing schools of thought. Some advocate greatly restricted carbohydrate intake and low calories; some, low carbohydrate and high fat; some, high carbohydrate and low fat; and others, totally unrestricted diets. In addition, there are many variations and combinations of insulin therapy. Soon after the institution of insulin as a remedial procedure it was observed that it makes little immediate or noticeable difference to the patient what kind of diet he follows. In short, with an adequate dose of insulin the patient can live with reasonable freedom from symptoms no matter how radical a diet is used. It should be remembered, however, that the human body can adjust itself to all sorts of dietary extremes, as is evidenced by the eating habits of tribes and races of people throughout the world. On the basis of experimental study it is believed that not less than thirty-eight chemical principles are essential in the human diet. These include the vitamins, the amino acids, certain fatty acids, glucose and mineral salts. Deprivation of many of these does not necessarily lead to rapid death or even to loss of function; indeed, these food principles vary extensively in their value to the human economy. However, the least significant of them has a purpose, so that it may be said that a definite deficiency is ultimately registered in the body of the individual whose diet is inadequate. From these observations it may be concluded that while man may be sustained for a considerable length of time on deficient diets, the optimum or most efficient will be the one which is best balanced with reference to his essential needs. The diabetic may and frequently does suffer from both insulin and food deficiency. It follows, therefore, that the diet best suited for the patient is the one which is calculated with reference to his essential needs, both in kind and in amount. The factors to be considered in planning such a diet are age, sex, height, weight, body surface area, and occupation. There are other factors of minor significance such as race, religion, and complicating diseases. The diet should have a constant value, varied only under exceptional circumstances. The degree of the patient's inability to utilize such a diet in terms of urine sugar would roughly represent a measure of insulin deficiency. For the sake of brevity, the details of the technique of determining these values are omitted in this paper.

The prolongation of the lives of diabetic patients by insulin therapy has created many new and interesting clinical problems. For reasons not yet clearly understood arteriosclerosis is a frequent accompaniment of diabetes. This degenerative vascular process may be either general or localized. When it involves the kidneys, heart, or brain it usually presents a clinical condition of the conventional type which may be of short duration, non-disabling, and of fatal termination. But when it involves the lower extremities, as is frequently the case, it may be of long duration, painful, and extremely disabling, culminating in the tragedies of gangrene and leg amputation. Of all the complications of diabetes this is by far the worst. Its occurrence is constantly increasing. Any measures which will curb or limit its degree of destruction deserve thoughtful attention. In a case of diabetes in which there is associated peripheral vascular disease leading to ulcer and gangrene of the feet, the following is the usual sequence of events:

The constriction or partial occlusion of nutrient arteries and arterioles leads to an impairment in the nutrition of the foot muscles. This in turn causes the arches of the feet to collapse, with faulty distribution of body weight on the soles of the feet and toes. At the points of excessive and unusual weight bearing, thick callouses form. The skin on the feet of the diabetic patient with peripheral vascular disease is usually atrophic, scaly and inelastic. Its ability to withstand trauma or friction is greatly reduced.

Address delivered before the Forsyth County Medical Society, Winston-Salem, October 13, 1942.

Callouses are the usual reaction. These in time pinch off the blood supply to the subcutaneous tissues, causing small extravasations of blood which appear as black and blue areas and, if rapid in formation, as blisters. An area of injured blood vessels is likely to enlarge quickly and deepen as the process continues. Next will be observed a sterile ulcer of small size, containing a serosanguineous fluid. If the ulcer is on the toes and near the nail edges, it may become infected. When the bed or matrix is poorly supplied with blood, the growth tends to contract, the nail curves downward and inward, in some cases almost forming a circle. Where only the lateral margins are involved, the familiar ingrowing nail results. Callouses on the ball of the foot or heel may crack or be injured, thus making possible the entrance of organisms from the surface. Infection is followed by edema and further blocking of the circulation. When a terminal arteriole or artery is cut off, necrosis results. In the case of the toes, if the superficial vessels are obstructed, gangrene of the skin alone will result. Such a condition, if promptly and properly treated, is curable without sacrifice of the part. If it is neglected, however, and the vessels supplying the muscles and deeper structures become involved, death of the occluded part rapidly follows. This can be relieved only by amputation or excision. Disturbances of circulation and ulcers on the feet of diabetics cannot be treated by casual methods or with indifference. In the non-diabetic person, sores usually heal of themselves with or without a doctor's care. This is not true, unfortunately, in the diabetic patient. Unless prompt and appropriate treatment is instituted, gangrene is certain to follow. The degree of involvement and destruction determines the scope of surgical treatment. Until recently a gangrenous toe usually meant a mid-thigh amputation. In our service we have developed and made use of certain techniques of treatment which have greatly lessened the necessity for radical surgery. The various steps pursued are tabulated as follows:

1. Make sure of the best possible general nutrition by correcting the diabetic state, and by giving a balanced diet, with vitamins and insulin.
2. Elevate and maintain the diseased limb so that it will be on the same level as the heart.
3. With a sharp scalpel remove callouses and corns. Dissect out thoroughly all necrotic tissue.
4. Use sterile dry dressings, if the wounds are clean; special antiseptic dressing if infected.
5. Avoid hot water bottles, electric pads and diathermy.
6. Keep limbs warm by means of woolen blankets. Avoid steel cages. Use simple foot board[1] instead (fig. 1 and 2).
7. Enforce hygiene of the skin, and employ gentle massage of the limb, keeping away from diseased area.

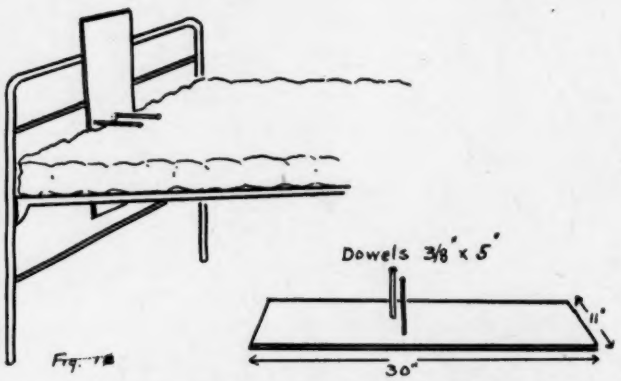

Fig. 1. Foot board used in place of the steel cradle to keep the bed clothes from pressing on the foot.

Since the limits of this paper do not permit discussion of the regulation of the diabetic state, attention will be directed solely to clarifying the suggestions regarding the care of the foot lesions. The elevation of the foot to the heart level is absolutely essential. When an ulcer appears on the foot of the diabetic, it invariably means obstructed circulation. Healing of an ulcer will rarely take place unless the limb is elevated. Ointments, surgical dressings, and vacuum and pressure

1. The foot board shown in figure 1 is made of five-ply plywood, a half inch thick. Its dimensions and constructions and method of use are revealed by the drawing (fig. 2). It has many advantages over the steel cradle, chief of which are:
   1. The foot and leg of the patient are kept warmer and more comfortable.
   2. It is easier to get at the foot for dressings and treatment.
   3. Electric light bulbs and hot water bottles are not needed; these are a hazard and should not be used.
   4. Female patients are not exposed during dressings and treatments as is the case when the cradle is used.
   5. It is easier for the patient to sit up in bed, eat his meals, and perform many personal tasks with which the cradle interferes.
   6. The boards are inexpensive, and can be made anywhere by anyone. The use of valuable steel is avoided.

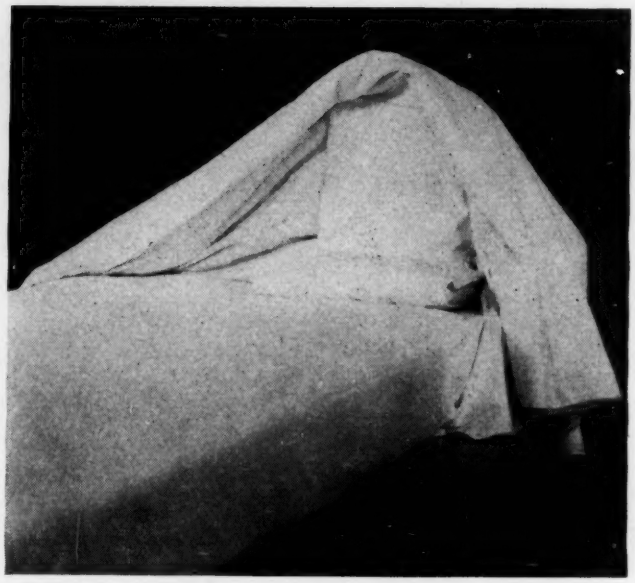

Fig. 2. Hospital bed equipped with foot board and prepared with small pillows for use.

devices for improving the circulation are not even to the slightest degree a substitute for elevating the part. The majority of foot ulcers will heal of themselves if the lesion is kept clean and dry and the foot elevated.

The correct degree of elevation of the limb during the healing process is important. It depends entirely upon the patency of the circulation in the affected limb and is readily determined by a simple test. With the patient in both horizontal and sitting positions, the leg is elevated to that point where the redness of the foot or congestion disappears. It may range from an angle of plus 45 degrees in a severe case to one of minus 45 degrees or more in a mild obstruction. The position of the body and the angle at which the circulation appears to be normal may be called the healing angle, and it is in this position that the leg and foot should be maintained if good results are to be achieved. All other treatment is secondary. The destroyed or devitalized tissue must be completely removed and the resulting wound kept clean. When only the skin is involved this surgical procedure may be done in the home or the office. When the deep structures and muscles and bones are involved, the case becomes a hospital problem. If the patient has a fever and there are evidences of extension of the infection, such as increasing redness of the skin away from the lesion, red streaks along the veins and lymphatics, and positive blood cultures, the oral use of one of the sulfonamide drugs is advised. The prompt use of chemotherapy will frequently obviate the necessity for drastic surgery and high amputation, and goes far toward promoting a successful outcome. The necessity for thorough and frequent debridement of even superficial lesions should be stressed. A foot wound which does not readily heal under this technique is probably harboring diseased bone.

After the lesion has healed, the patient still has partially occluded peripheral blood vessels and a substandard nutrition in his legs and feet. He must thereafter adjust his life to a measure of physical activity compatible with the endurance of his legs. This means he must have regular rest periods during the day, with feet elevated, and shoes designed with inner soles so padded as to avoid areas of excessive pressure and friction. The feet should be kept scrupulously clean and massaged daily, using preferably a vaseline preparation. Camphor ice vaseline is a satisfactory lubricant. Buerger exercises are helpful in improving the circulation. The toe nails should receive special care, using heavy clippers for the purpose; knives and scissors are not satisfactory. The reappearance of callouses and ulcers means that these measures are not being carried out or that the patient is using his legs beyond the maintenance capacity of his circulation.

The plan of treatment herein roughly outlined has been used in my service for more than five years. Of late we have made freer use of the sulfonamides and have practiced debridement with greater thoroughness.

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Prior to the institution of this plan, we performed from five to ten high amputations per year. During the past three years under this method we have been able to obviate high amputations. In this period, we have studied and successfully treated many cases. Photographs of the foot lesions in three of them are shown here. The original pictures were Kodachrome transparencies, the color values of which are slightly exaggerated in the high lights and shadow of black and white prints. The lesions look slightly worse than they really were; likewise the effects of debridement and healing do not show the full measure of improvement. The foot lesions on these 3 patients are completely healed and have remained well for more than a year.

The major surgical procedures in this work have been done by my colleague and collaborator, Dr. Walter A. Calihan.

Case Reports

Case I. This patient was a male veterinarian, aged 54 years, with diabetes of twelve years' duration. He had had three attacks of frost bite involving the feet, the most recent one preceding the appearance of blisters on both feet. Figure 3 shows the area of skin gangrene at the time of hospital admission. Figure 4 shows the same foot six weeks later, nearly healed. These lesions after two and one-half years are completely healed. Treatment consisted in elevation of the limb, debridement of necrotic tissue every two to four days, and dry dressing with the occasional use of sulfanilamide powder on infected areas.

Figure 5 shows lesions resulting from the careless and unauthorized use of a hot water bottle by this same patient.

Case II. This patient was an obese female, aged 50 years, with diabetes of twelve years' duration and of moderate severity. She had small areas of skin gangrene and perforating ulcers on both feet, some of them of several months' standing. Figures 6 and 7 show the appearance of the lesions on admission to the hospital. Figures 8 and 9 show the appearance of the feet after two weeks of elevation and frequent debridement. These lesions were completely healed after approximately six weeks' treatment and have remained well for two years.

Fig. 8

Fig. 9

Fig. 10

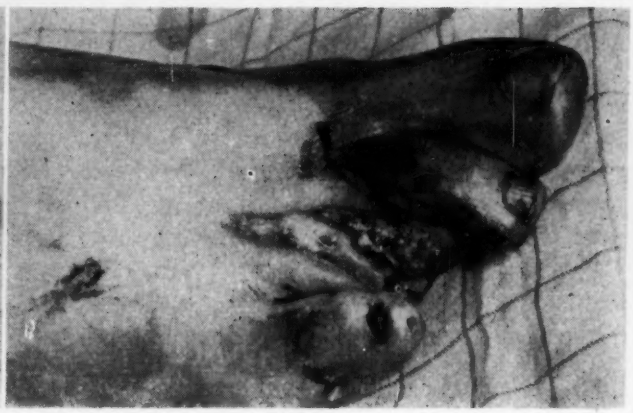

Fig. 11

Case III. This Italian woman, aged 71 years, had had diabetes for fourteen years. Vascular lesions appeared on the left foot in January, 1941. The early lesions healed, but the patient was uncooperative and osteomyelitis of the metatarsals followed, necessitating removal of the third and fourth toes. Sulfathiazole was given internally and locally, the limb was elevated, and frequent debridement of necrotic tissue was done. The foot has remained healed for two years. Lesions of this severity heretofore have necessitated high amputation.

Figure 10 shows the condition of the foot after the patient had lost the fourth toe. The third toe is gangrenous and infected, inflammation extending up the dorsum of the foot. Figure 11 shows the foot two weeks later, after the third toe and metatarsal bone had been removed.

Summary and Conclusions

The lesions of the feet which occur in middle-aged and elderly diabetic patients are the result of an impaired circulation in the legs, with a train of symptoms and signs of lowered nutrition—callouses, ulcer and gangrene. By prompt and efficient treatment, which consists mainly of restoring the adequacy of the circulation and removing devitalized tissues, healing can be achieved. Thereafter the health of the foot depends upon the care which it receives, with due reference to the capacity of the circulation to nourish the impoverished part.

The Danger of Neglecting the Toes in Diabetic Patients.—I do not dare to look up how much of the free-bed money for diabetic patients in the New England Deaconess Hospital is spent on neglected toes, but I venture to say that the charity money devoted to the toes of elderly diabetic patients is five times that expended on diabetic patients in their teens. — Elliott P. Joslin: Diabetic Hazards, New England J. Med. 224:592 (April 3) 1941.

ILEO-VAGINAL FISTULA

A Case Report

R. H. CRAWFORD, M. D.
RUTHERFORDTON

In an experience of more than 2000 consecutive cases treated in our Clinic with intra-uterine radium, the complication I am reporting is the first of its kind we have encountered. A number of problems involving general surgery as well as gynecological surgery appeared, and for this reason I bring it to your attention. The case aroused great interest with us, and I hope will prove of interest to you.

The patient was a frail married woman, aged 54, a multipara, weighing about 100 pounds. She first noticed a rather foul discharge from her vagina in February, 1940. The following month she had irregular bleeding, which continued for six weeks. At this time she consulted her family physician, who made a diagnosis of carcinoma of the cervix and referred the patient to us in May, 1940. She was admitted to the Rutherford Hospital on May 9, 1940, and discharged on May 18, 1940.

Upon vaginal examination, a new growth was found, involving both lips of the cervix (fig. 1). On the posterior lip the growth extended to the posterior vaginal wall. The cervix was small. The tissue bled freely at examination. The uterus was not enlarged; it was freely movable, and no pathologic lesion was palpable in the adnexal region.

A biopsy of the cervical growth was performed, and the pathological report by Duke University was "squamous cell carcinoma of the cervix".

Read before the Section on Surgery, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

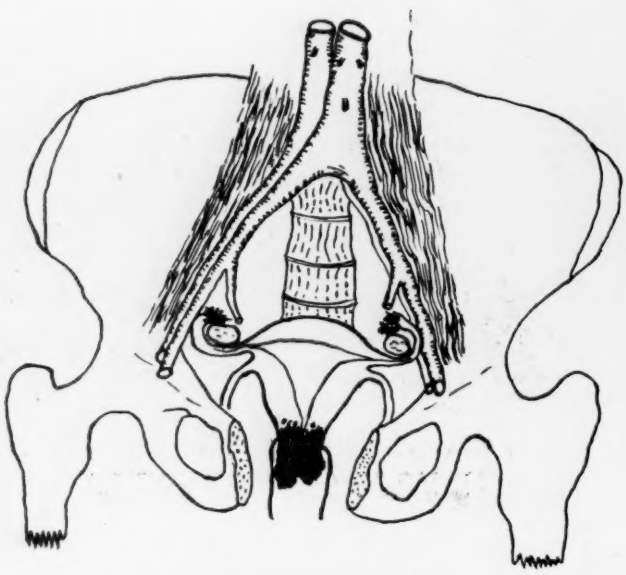

Fig. 1. The shaded area shows malignant involvement of the cervix uteri.

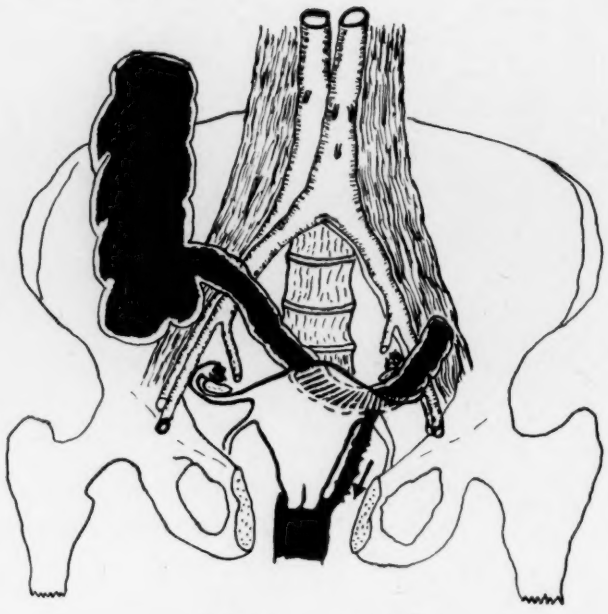

Fig. 2. The shaded area shows the ileo-vaginal fistula tract.

The patient received a large dose of radium within the uterus and against the face of the cervix. The bladder and rectum were protected by a lead cone and sterile gauze packing. External irradiation about the pelvic girdle was given several days later. Her convalescence was uneventful. Upon her discharge on May 18, 1940, she was advised to come back at the end of six weeks for a check-up examination. On July 3, 1940, she returned. Vaginal examination revealed satisfactory progress. There had been pain but no bleeding. A small area of necrosis was seen in the cervical os. The patient was allowed to return home but was told to report every six weeks for examination.

On August 16, 1940, the patient appeared, complaining of pain in her lower abdomen and a profuse discharge from her vagina. The cervix looked smooth and no evidence of cancer was found, but to the left of the posterior lip there was a small opening which was thought to be a recto-vaginal fistula. No mass was palpable through the vagina or rectum. She decided to go back to her home, and there had a stormy time, with a great deal of pain and a profuse discharge from the fistula.

Five months later, on January 15, 1941, she felt greatly improved and came to the hospital for re-examination. At this time there was no discharge from the vagina. The cervix was smooth, and looked fairly normal. The supposed recto-vaginal fistula had closed itself completely. It seemed that an excellent result had been obtained, inasmuch as no further evidence of malignancy was found. The patient went home in a happy frame of mind and was gaining in weight and strength.

Her satisfactory progress continued for a time, and then the fistula opened itself and the profuse discharge reappeared. She did not return to the hospital until September 29, 1941—eight and one-half months after the last examination. She stated that she had been confined to bed for four weeks, that she felt very weak, and had suffered much pain in her abdomen, especially after eating. She continued to have a profuse, thin, watery discharge from the vagina. There had been a marked loss in weight. Upon vaginal examination, the cervix was smooth and looked normal. The uterus was not enlarged and no mass was palpable. To the left of the cervix was an opening which was about the size of an ordinary lead pencil. A profuse, thin, watery discharge came from the opening. No mass was palpable in the rectum. The patient's general condition was bad; her hemoglobin was 60 per cent. The soft parts about the vagina and perineum were fiery red and painful. She was re-admitted to the hospital in the hope that her condition might be improved so that an operative procedure could be undertaken. The marked loss of

Fig. 3. A section of the resected terminal ileum. There is no evidence of malignancy.

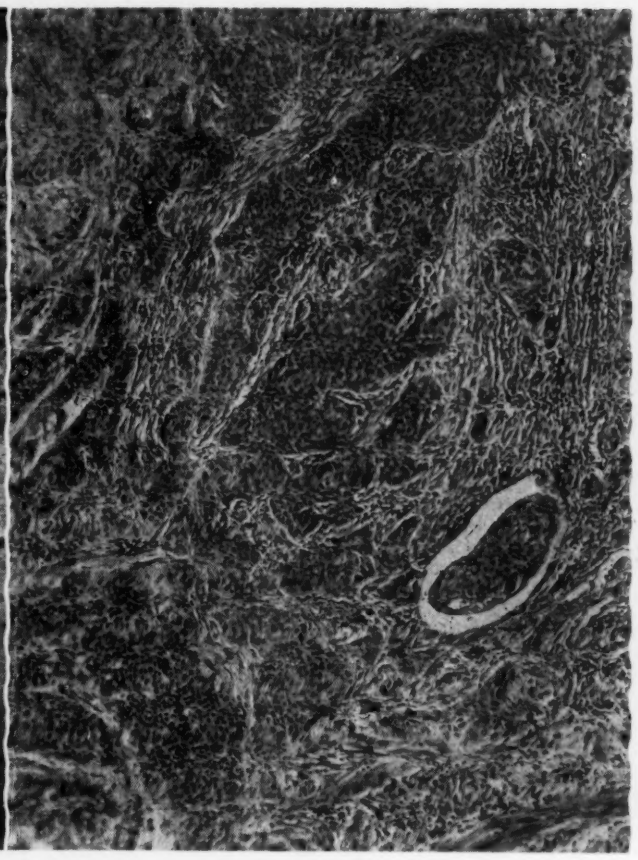

Fig. 4. A section showing the uterine tissue with malignancy.

weight and thin, watery discharge suggested a fistula from the small bowel. Barium enemas showed that the rectum and descending colon were not involved (fig. 2).

Several blood transfusions were given along with other supportive treatment, and her condition improved. The hemoglobin rose to 75 per cent and on November 1, 1941, the patient was operated on. A midline incision was made, and upon inspection of the rectum and sigmoid no malignancy was found. The uterus was small. In the region of the left cornua a loop of terminal ileum about 18 cm. from the cecum was fused tightly. Down the folds of the left broad ligament the fistulous tract found its way to the vagina. The loop of ileum was carefully removed from the uterus and an opening about the size of a five-cent piece was found in the ileum. There was no evidence of malignancy in the loop of ileum, nor was any enlarged gland found anywhere. Several inches of the ileum were resected and a lateral anastomosis was performed. The fistulous tract was then visualized in the left broad ligament, hugging the left side of the small uterus. The uterus itself was dull grey in color and quite friable; the blood supply was very poor. A subtotal hysterectomy, rather than a pan-hysterectomy, was performed, on account of the old cervical lesion. There was practically no bleeding, and the uterine tissue was almost necrotic. The edges of the opening into the vagina were freshened and a Penrose drain was inserted into the pelvis and the lower end was drawn out through the vaginal tract. The patient's convalescence was uneventful, save for the fact that an abscess developed in the incision and discharged freely. However, the incision finally healed with no incisional hernia. Her bowels moved normally and the opening in the vagina healed readily after removal of the Penrose drain. She gained in weight and strength and returned to her home on November 26, 1941.

The tissue removed was sent to Duke University for pathological examination. The loop of ileum did not reveal any malignancy (fig. 3), but the uterus showed a squamous cell carcinoma, invasive in type. Throughout the uterine stroma, small or moderate sized groups of squamous cells were seen, pretty well circumscribed (fig. 4).

Fig. 5. A section of the corpus uteri showing the malignancy attenuated.

Different sections showed long strands of epithelial cells of the squamous type, invading the uterine musculature itself. It was thought that the process represented one of relatively long standing.

We have received several cards from the family of the patient stating that she is getting along very well indeed. The last report said that she had improved so much that unless we heard from her again, we would know that she is doing well. In spite of the fact that the last pathological report revealed strands of squamous cells invasive in type in the corpus of the uterus, the organ looked as if the malignant growth had been checked (fig. 5).

Over a period of twenty years we have used a large amount of radium and have had many hundreds of interesting cases. Since the early days of radium many improvements have been made in its use, and we feel that radium therapy offers the best means of treating carcinoma of the cervix. Good results can often be obtained in carcinoma of the corpus uteri as well.

Abstract of Discussion

Dr. Julian A. Moore (Asheville): In closing the fistula Dr. Crawford adhered to broad surgical principles by resecting the fistulous portion of the ileum. I was rather surprised, however, at his saying that he did not take out the whole uterus because of old carcinoma. I should have thought that it would be safer to take out the whole uterus rather than part of the body of the uterus.

I think Dr. Crawford is to be congratulated, and certainly the patient is, in that the condition was recognized as early as it was and the malignant growth apparently checked.

Dr. R. O. Lyday (Greensboro): Dr. Crawford's presentation of this very interesting case has brought to mind a case which I had some eight or ten years ago. A woman who had a total abdominal hysterectomy some six weeks before was brought into the hospital in an extremely emaciated condition. There was excoriation all about the vaginal area and the thighs. The patient was mentally confused, and markedly dehydrated. The patient was given barium by mouth, and in perhaps half a minute apparently the entire amount came out through the vagina. Upon operation it was found that two loops of jejunum had become attached to the suture line in the vaginal vault. The first one was dissected off without any tearing into the lumen. In the other loop there was a fistulous tract; the jejunum had been caught in this area and formed a fistula which would probably have admitted the thumb. It was not necessary to resect the bowel in this case; it was repaired with adequate lumen, and the patient recovered without any difficulty.

When Dr. Moore was discussing the procedure Dr. Crawford used I was thinking that I would have done the same thing. A panhysterectomy would have been a far more formidable procedure than a simple subtotal hysterectomy.

Dr. Crawford: In answer to Dr. Moore's remark about my not taking out the cervix, I did not want to do any more than I had to for fear of stirring up trouble.

War has not changed the basic strategy of tuberculosis control. The cardinal points are: find the case early—institute rest and isolation immediately—treat with modern methods—rehabilitate. War, however, alters the community approach. Sudden growth of war industries has brought armies of new industrial workers and their families into our midst. These have not yet become part of the community pattern. It is essential that these millions of workers be reached in the Early Diagnosis Campaign Against Tuberculosis. Education of the people, in war as in peace, is the driving power of democracy at work. Kendall Emerson, M.D.

Experience everywhere has shown that the stage of tuberculosis on admission to a sanatorium is the most important single factor in its prognosis, while recognition of tuberculosis before it has reached the infectious stage is the only certain way of checking the spread of the disease within the family group.

No history of exposure to tuberculosis can be obtained in more than one-half of all diagnosed cases. This fact is sufficient indication that any well-balanced program for tuberculosis control must include other comprehensive diagnostic procedures, such as mass examination of specially susceptible groups. From "The Modern Attack on Tuberculosis" by Chadwick and Pope.

POSTOPERATIVE PULMONARY ATELECTASIS

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WILSON

Postoperative pulmonary atelectasis is a condition that should be of great interest not only to the surgeon, but to every one in the medical profession: to the internist because he is often called into consultation when this complication occurs; to the otorhinolaryngologist because it may happen to his own operative cases and also because he is often asked to examine the upper respiratory passages before elective operations; to the bronchoscopist because he is sometimes called in to treat these cases; to the roentgenologist because he must interpret the x-ray findings; and to the family physician because upon him falls the brunt of most of the explanation to the patient's family when this unfortunate complication occurs.

Definition

Postoperative pulmonary atelectasis has for many years gone under the popular misnomer of "ether pneumonia". Actually, this condition occurs almost as frequently following spinal or local anesthesia as it does after inhalation anesthesia. Furthermore, it is not in reality a pneumonia at all.

The condition is one in which, because of bronchial obstruction, air is absorbed from the alveoli. As a result, complete airlessness of a lobe or a lung (massive collapse), or of a group of lobules (lobular or patchy atelectasis) occurs. It is the most frequent postoperative pulmonary complication, and is often mistaken for pneumonia.

William Pasteur in 1910 recognized and described the clinical picture. He maintained that the condition was at the bottom of most pulmonary disorders following operation. However, only in recent years has the surgical profession recognized that he was right.

Pathology

The process starts with the occlusion of the bronchus or bronchioles by a mucous plug, or plugs. The alveolar air of the involved lung or portions thereof is absorbed within an hour or so, and complete airlessness of the affected portions results. The airless lung is solid and much smaller than normal. The mucus occluding the bronchus or bronchioles usually is grayish green in color, tenacious, purulent, and loaded with pneumococci which are usually type IV. The decrease in the size of the involved lung is compensated for by depression of the ribs, elevation of the diaphragm, displacement of the mediastinal structures to the involved side, and compensatory emphysema of the uninvolved lung tissue.

If the mucous plug is coughed up early or removed by bronchoscope, the lung or portions thereof may immediately re-expand. Usually it takes a day or so for the process to subside, and some cases require several weeks for recovery. In the latter, there is undoubtedly secondary infection or pneumonitis. The serious complications of atelectasis are pneumonia, pulmonary abscess, bronchiectasis, and empyema.

Etiology

As Homans states, the villain of the play is evidently the mucous plug, which occludes the bronchus, causing air to be absorbed from the lobule, lobe, or lobes beyond. However, bronchospasm or bronchomotor and vasomotor disorders may play a part. The formation of the mucous plug is clearly dependent upon two factors—an increase of bronchial secretions, and their retention.

Pre-existing upper respiratory infection, poor oral hygiene, bronchitis, and pulmonary disease are the most important antecedent factors in the increased production of bronchial secretions. Allergy and an irritating anesthetic agent unquestionably play a part, but atelectasis occurs almost as frequently after spinal anesthesia as it does after inhalation anesthesia.

Retention of bronchial secretions is dependent upon three main factors: (1) *A decrease in the cough reflex.* Pain, certain types and sites of incisions, certain types of anesthesia, and the postoperative use of too large doses of opiates all tend to suppress the normal cough reflex. (2) *Decrease of respiratory excursions after operation.* This factor is undoubtedly influenced by any anesthetic, no matter what type is used, except in local anesthesia. Inhalation, intravenous, and rectal anesthesia can all have a depressant action on the respiratory center. Spinal

Read before the Seaboard Medical Association, Wilson, North Carolina, December 8, 1942.

anesthesia causes paralysis of the abdominal and lower intercostal muscles and thereby interferes with respiratory excursions and reduces pulmonary ventilation. Pain, *per se* or by reflex action, can limit respiratory movement and depth. The type and site of the incision influence respiratory excursion. Transverse incisions are under less tension and are therefore less painful. Upper abdominal incisions are influenced more by respiration; hence pain causes a restriction of abdominal movements and a splinting of the diaphragm. The position of the patient during and after operation can influence respiratory movements. Tight strapping of the upper abdomen and lower thorax, and gaseous distention can also cause a decrease in respiratory excursions. (3) *Position of the patient during and after operation.* A Trendelenburg position of at least 10 degrees allows secretions to gravitate to the mouth, where they can be removed. It is a common observation that postoperative atelectasis is uncommon after pelvic laparotomy. Most pelvic laparotomies are done with the patient in the Trendelenburg position. I have seen only one case of postoperative pulmonary atelectasis following a pelvic laparotomy, and that was in a patient whose spinal anesthesia had to be supplemented with a general anesthetic. Kidney operations necessitate the patient's lying on one side. As a result the lower lung is compressed and splinted by the weight of the body, and secretions tend to gravitate into the lower lung. A fixed position after operation predisposes to the accumulation of bronchial secretions; therefore, patients should be turned often. A slight Trendelenburg position immediately after operation, at least until the patient fully reacts from the anesthetic, is of importance in preventing atelectasis.

Symptoms and Physical Findings

Usually in massive collapse there is a sudden onset twelve to seventy-two hours after operation, with dyspnea, cyanosis, rapid pulse, high and irregular temperature, chest pain, and cough, with expectoration of thick, tenacious, grayish-green sputum. Elevation of temperature, a tight cough, and coarse rales over both lung fields are probably the only premonitory symptoms. Cases of the lobular or patchy type seem to have a slower and less violent onset with less marked symptoms. These cases can go on to massive collapse without pronounced symptoms.

On physical examination there is diminished expansion on the affected side; the trachea and apex beat of the heart are displaced towards the affected side; dullness or flatness is present on percussion of the involved lung or portion thereof; and breath sounds and rales are absent. Displacement of the mediastinal structures is the most important point in the differentiation of pulmonary atelectasis from pneumonia, as bronchial breathing may be present over the collapsed lung after expulsion of the mucous plug but before the lung re-expands.

In the patchy or lobular type there are coarse and musical rales over one or both lung fields, areas of diminished or absent breath sounds, and areas of impaired resonance on percussion. In these cases the symptoms subside more quickly than in a true bronchial pneumonia.

If the secretions plugging the bronchi are evacuated within a few hours by coughing or are removed by aspiration, then the lung may immediately become aerated and all signs and symptoms disappear, except for some temporary cough and expectoration. The longer the condition exists, the longer it takes for complete aeration of the lung to occur. During the subsidence of the process, coarse rales may be heard and areas of bronchial breathing may be demonstrated.

X-rays of the chest are confirmatory but are not absolutely necessary in every case.

Prognosis

The condition is rarely fatal in patients who are good operative risks, and recovery within a few hours to a few weeks is the rule. However, anoxemia and the increased cardiac load produced thereby may contribute to a fatal outcome of the disease for which the operation was performed or which was present before operation. Early diagnosis and proper treatment bring about a cure without complications in the vast majority of cases.

Treatment

Prophylactic:

1. Avoid elective surgery if any degree of upper respiratory infection is present, and also during epidemics of upper respiratory infections.
2. Treat oral sepsis before elective operations.

3. If feasible, use a Trendelenburg position of at least 10 degrees during operation.

4. Keep the mouth and pharynx clear of secretions during operation.

5. "Flush" the lungs thoroughly with 5-10 per cent carbon dioxide in oxygen at the end of the operation.

6. Employ firm but not too tight strapping of the wound.

7. If a basal anesthetic such as avertin has been used, or if the general anesthetic is of long duration, give respiratory stimulants such as caffeine, coramine, and metrazol during the period of reaction. Also stimulate respiration with carbon dioxide and oxygen inhalations.

8. Place the patient in the Trendelenburg position until he has fully reacted.

9. Change the patient's position frequently after operation, starting the moment he is returned to his room.

10. Encourage deep breathing and coughing on the part of the patient. Teach nurses to support the abdomen when the patient coughs.

11. Regulate narcotics so as to control pain, but not to depress respiration or cough reflex.

Active:

1. Give deep breathing exercises and inhalations of carbon dioxide and oxygen at the first sign of atelectasis.

2. Start sulfonamide drugs at the first sign of atelectasis, as they may prevent it, ameliorate the symptoms, or prevent complications.

3. Change the patient's position frequently, and if massive collapse has occurred, turn the patient on his sound side and roll him back and forth in this position (Sante's maneuver). This may produce a shifting of the exudate and result in an active cough that may clear the obstruction.

4. Employ oxygen therapy if the patient is anoxemic.

5. Remove the plug with the bronchoscope or by aspiration with a tracheal catheter.

6. Continue sulfonamides in persistent cases and give expectorant drugs.

7. Diathermy and x-ray treatment of the chest may be of value in stubborn cases.

Review of Cases

I will now attempt to review and analyze 18 cases of postoperative atelectasis collected over a period of five years. These cases were collected from the surgical services of four different hospitals, and all but 3 are from my own practice. The 18 cases include 8 cases of massive collapse, 8 cases of partial collapse, and 2 questionable cases.

Of the 8 patients with massive collapse 7 were of the white race and 1 was a Negro. There were 6 males and 2 females. The ages ranged from 15 to 49. Appendectomy without drainage was the operation performed in 6 cases, pelvic laparotomy in 1, and closure of a perforated peptic ulcer without drainage in 1. Avertin-ether anesthesia was used in 3 cases, spinal anesthesia in 3 cases, straight ether in 1, and spinal anesthesia supplemented with gas, oxygen, and ether anesthesia in the remaining case. Massive collapse of the lower right lobe occurred in 5 cases, of the lower left lobe in 2 cases, and of the entire lung in 1 case. Premonitory symptoms occurred within twelve to forty-eight hours after operation in all cases. Only 2 cases had what might be called a very sudden onset. Definite massive collapse could be demonstrated on physical examination within twelve hours to five days after operation. Two patients were extremely ill, 3 acutely ill, 2 only moderately ill, and 1 had very few symptoms referable to his atelectasis. Recovery was prompt in 5 cases, complete re-expansion occurring in from two to five days. In 1 case one week was required for complete aeration of the involved lobe. Two patients required from two to three weeks for complete disappearance of all signs of atelectasis. However, the temperature, pulse, and respiratory rates were normal in all cases within five days. The highest recorded temperature was 104 F., the highest pulse rate was 155, and the highest respiratory rate was 37. Expectoration of thick, tenacious, grayish-green sputum was noted in all cases. Wound infections in 2 cases and an acute pyelo-nephritis in 1 case caused an undue prolongation of hospitalization, but in the remaining cases hospitalization was prolonged only a few days. Three patients had slight upper respiratory infections on admission, 1 had a very pronounced upper respiratory infection, and 1 had just recently recovered from an upper respiratory infection. There was no evidence of upper respiratory infection or history of recent infection in the 4 remaining cases. Oral sepsis was noted in one of the patients with

upper respiratory infection and he said he had been gassed in World War I. An asthmatic history was given by the patient who had recently recovered from an upper respiratory infection. Continuous duodenal suction by a nasal tube was used in one case and may have been a factor in the production of atelectasis. Sulfonamide drugs were used in 5 cases and seemed to be of value, but the mild symptoms and rapid recovery may have been coincidental.

Of the 8 patients with partial atelectasis 6 were white and 2 were Negroes. There were 6 men and 2 women. Their ages ranged from 14 to 42. The operations performed were as follows: appendectomy with drainage, 1 case; appendectomy without drainage, 2 cases; herniorrhaphy, 1 case; cesarean section, 1 case; excision of Meckel's diverticulum, 1 case; gastro-enterostomy, 1 case; and partial ileo-colectomy, 1 case. Avertin-ether anesthesia was used in 2 cases, spinal anesthesia in 3 cases, straight ether in 2 cases, and spinal anesthesia supplemented with gas, oxygen, and ether anesthesia in the remaining case. The partial atelectasis was confined to one lobe (lower right) in 1 case, being patchy in the remaining cases. All patients were somewhat uncomfortable, but none were acutely ill. Expectoration of thick, tenacious, grayish-green sputum was noted in all cases. Recovery was fairly rapid in all cases. Hospitalization was not prolonged because of the atelectasis in any case. Upper respiratory infection was noted in 4 cases on admission. Oral sepsis was present in 1 patient who had an upper respiratory infection. A questionable history of coronary disease was obtained in 1 case. Continuous duodenal drainage by nasal tube was used in 1 case (gastro-enterostomy). One patient was later found to have a tuberculous area in one lung. This patient had a prolonged ether anesthesia and was in a state of shock for thirty-six to forty-eight hours following the operation (an ileo-colectomy). Gaseous distention was a factor in 1 case. Sulfonamide therapy was used in 5 cases, and apparently had a favorable influence on the condition. I believe that it prevented massive collapse in 1 case.

Of the 2 questionable cases of atelectasis, 1 followed a herniorrhaphy and appendectomy under spinal anesthesia supplemented with sodium pentothal. Gross infection of the wound occurred, and the patient also developed a pulmonary condition that was either an atelectasis or an embolism. His hospital stay was prolonged for several weeks. The other patient was an 18 year old Negro male in whose case the pre-operative diagnosis was bronchial pneumonia and acute suppurative appendicitis. Operation was performed under local anesthesia. Death occurred on the sixth postoperative day from anoxemia. In this case atelectasis was apparently superimposed on the pneumonia. These 2 cases are presented because I believe that bronchoscopy would have aided in the diagnosis and possibly in the treatment of the first case. Bronchoscopic removal of the thick tenacious secretion would have undoubtedly benefited the second patient. However, a bronchoscopist was not available for either case.

Summary and Conclusion

The pathology, etiology, symptoms and physical findings, prognosis, and treatment of postoperative pulmonary atelectasis have been reviewed. Eight cases of massive collapse, 8 cases of partial atelectasis, and 2 questionable cases have been reviewed. Only one death occurred, and that was in a questionable case. The condition is a serious one, but rarely fatal. It occurs more often in men than in women. Antecedent upper respiratory infection seems to be a very important factor. The condition may occur following any type of anesthesia but I believe that avertin-ether anesthesia, prolonged general anesthesia, and spinal anesthesia supplemented with a general anesthesia produce the majority of the cases of postoperative pulmonary atelectasis. I believe that the lowest incidence follows nitrous oxide, oxygen and ether anesthesia. I have had no experience with cyclopropane.

The most important factors in the management of the condition are prophylaxis, recognition of potential cases, early diagnosis, and the early institution of proper and adequate therapy.

Wear and Tear.—Wear is a natural and legitimate result of lawful use, and is what we all have to put up with as the result of years of activity of brain and body. Tear is another matter. It comes of hard or evil usage of body or engine, of putting things to wrong purposes, using a chisel for a screwdriver, a penknife for a gimlet. Long strain, or the sudden demand of strength from weakness causes tear. Wear comes of use; tear from abuse.—*Weir Mitchell*, quoted by Arlie V. Bock: Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:75 (June) 1942.

NURSING AS THE FOUNDATION OF MEDICINE

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DURHAM

Nursing sometimes is regarded merely as one of the aides of medicine, but it really merits recognition as the cornerstone of its foundation. Patients are helped as much by nursing as by medical care. If examples are needed, recall that of the three hundred and twenty-nine pediatric diseases, two hundred and twenty-nine are not, at present, affected by medical skill; the patients usually recover or succumb regardless of therapy[1]. However, the comfort and well-being of these patients are materially improved by good nursing care. Of the other one hundred diseases of children, thirty-seven can be prevented by procedures, most of which can be done and usually are done by nurses, and sixty-three respond to adequate therapy, which with rare exceptions cannot be instituted without excellent nursing skill. In fact, prophylaxis and therapy are almost impossible without nurses. What would modern hospitals and present day operating rooms be without nurses? One need only remember some of the hospitals during the last war when nurses were not always available. Contrast the office of a physician or of a dentist who has a nurse assistant with one suffering this lack. The importance of the nurse recalls Darwin's observation of a slave ant, which, "introduced into a company of helpless, starving master ants, instantly set to work, fed and saved the survivors, and put all to rights."[2]

This interdependence of medicine and nursing is not new; in fact the former profession has risen to eminence only during those epochs in which nursing has reached great heights. To many, nursing began with Florence Nightingale; but actually the profession is as old as medicine itself. During the four main cycles of medicine—*Primitive, Renaissance, Pharmacy,* and *Modern*—nursing approached adequacy in three, and only in these three did medicine really progress[3].

From the Department of Pediatrics of Duke University School of Medicine, and Duke Hospital, Durham, N. C., with the valuable assistance of Miss Judith Farrar, Librarian of Duke Hospital.

1. Davison, W. C.: The Compleat Pediatrician, ed. 3, Durham, N. C., Duke University Press, 1940, 316 pp.
2. Darwin, C. R.: The Origin of Species, John Murray, 1859, 337 pp.

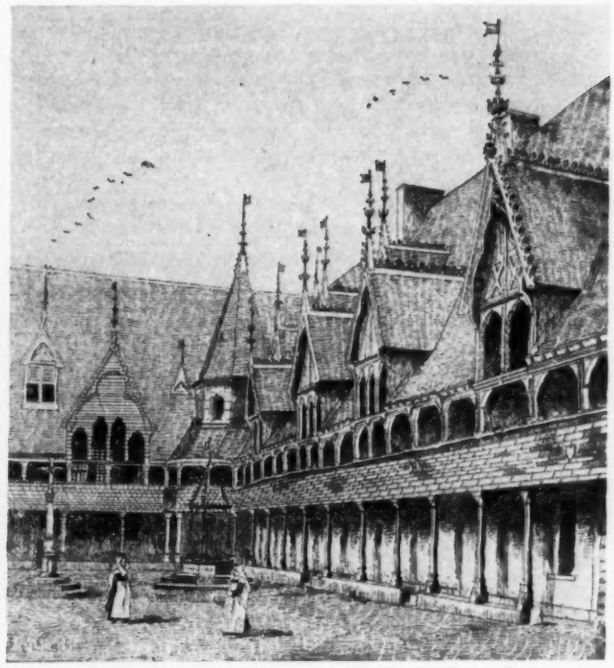

Fig. 1. Court of the hospital of Beaune, France (L'Hotel Dieu), founded 1443. (From La Grande Encyclopedie, 5:1053, Courtesy Librairie Larousse, Paris; Photograph by Ronco Aine, Beaune, Cote d'Or, France).

Primitive Era

The prehistoric, Egyptian, Sumerian, Oriental, Greek, Roman, Byzantine, Mohammedan, Jewish and medieval periods ended in 1438 A. D., but the peak of the era was reached during the time of Hippocrates (460-370 B. C.). The greatest medical contribution of this period was in therapy, and although the use of many drugs was known, treatment usually was confined to fresh air, good diet, massage and hydrotherapy—procedures which are possible only if nursing is skilled. It is true that the nurses of this period were men, but they were nurses nevertheless. The Asclepieion at Epidaurus was as much a nursing home or sanatorium for physiotherapy, hydrotherapy and psychotherapy as any modern spa, hydrobad or Warm Springs. Hot douches, baths, poultices and even hot water bottles were used. During the eight centuries which followed the Hippocratic era, nursing lapsed into oblivion, and medicine declined with it. However, with the beginning of Christianity, it was the avowed duty of all Christian men and women to tend others in sickness, and by the fourth century, Deaconesses in the early

3. Davison, W. C.: The Evolution of Therapy—A Plea for Treating the Patient as Well as His Disease, South. Med. & Surg. 100:457-458 (Oct.) 1938.

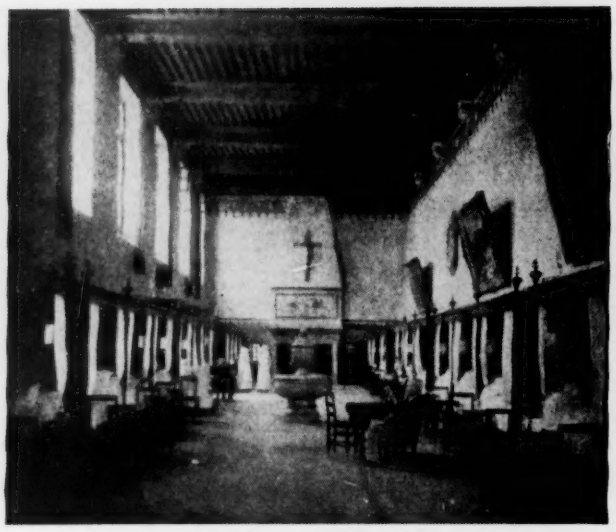

Fig. 2. A ward in the hospital of Beaune, France (L'Hotel Dieu), founded 1443[4].

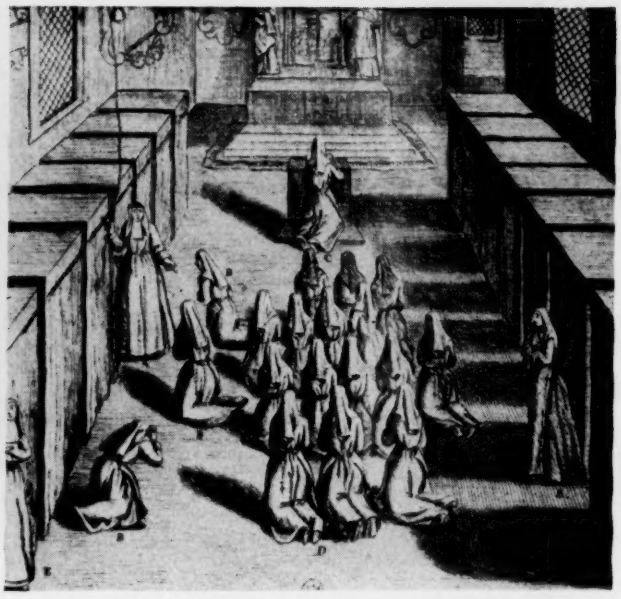

Fig. 3. The novices' dormitory in the hospital of Paris (L'Hotel Dieu). (From a print of the latter half of the seventeenth century in the Bibliotheque Nationale.)[4]

Church constituted a recognized order, devoted to the sick and the needy. The Widows are mentioned with the Deaconesses in caring for patients in the Apostolic Church Order[4]. Later, during the Crusades, military nursing orders arose, as for example, the Knights Hospitalers of St. John of Jerusalem, of which there was a female branch.

Renaissance

By the time of the Renaissance, nursing again rose rapidly. A product of this new era was the founding of the L'Hotel Dieu at Beaune in 1443 by Nicholas Rolin[5] (figs. 1 and 2). Numerous other hospitals were established throughout Europe, and the need for trained nurses greatly increased. Associations of women were formed to care for the patients in these new institutions, but they soon required help. To assist the Paris Association in 1630, Mlle. Le Gras and St. Vincent organized a few strong country girls, called "Filles de Charite", who later, as the need for special preparation and training was realized, became the Order of the Sisters of Charity[4] (fig. 3). It is no coincidence that the medicine of this epoch rose to eminence with the work of da Vinci in anatomy, St. Marthe in pediatrics, Harvey in physiology, Pare in surgery, and many others.

4. Seymer, L. R.: A General History of Nursing, New York, The Macmillan Co., 1933, 317 pp. Figures 2, 3 and 5 are reproduced with the permission of the author and publisher.
5. Kett, C.: God's Hostelry in Beaune, Trained Nurse and Hosp. Rev. 90:129-133 (Feb.) 1933; also Une Visite A L'Hotel-Dieu de Beaune, Dijon (France), Editions du Raisin.

Cycle of Pharmacy

During the next three centuries expansion and inflation occurred, and hospitals sprang up all over the world, far beyond the limits of the trained sisterhoods. In spite of the magnificent clinical contributions of Sydenham, von Rosenstein, Cadogan, Rush, and Laennec, many of the physicians of this era made strenuous efforts to treat disease rather than the patient. They advocated the most heroic procedures, and the welfare and comfort of their patients suffered rather than improved from their drastic remedies. A Daumier print of a Garde-Malade (fig. 4) illustrates the depths of degradation reached by the nurses of almost all of the hospitals, except those operated by the Catholic Orders, in which discipline and decency prevailed[6]. Apparently those responsible for the management of the non-Catholic hospitals could not free themselves from the idea that women in order to be faithful and good nurses must belong to some religious society and be bound by vows; consequently they made little or no effort to provide adequate training and living conditions for nurses who did not belong to religious orders[4].

6. Garrison, F. H.: An Introduction to the History of Medicine, ed 4, Philadelphia, W. B. Saunders Co., 1929, 996 pp.

Fig. 4. A French "practical" nurse (Garde-Malade) of 1842 (Daumier print).

Modern Era

The modern era of medicine was ushered in by the regeneration of nursing by Theodor Fliedner, pastor of Kaiserswerth on the Rhine, and his wife, Friederike, who in 1836 revived the ancient Church Order of Deaconesses. About 1850, Florence Nightingale came to the Fliedners for training. After her memorable service in the Crimean War, Florence Nightingale established, in 1860, the first training school for "new style nurses", which was similar to those of today[6] (fig. 5). Her definition of nursing as "helping the patient to live" has never been improved. The modern applications of pathology, bacteriology, biochemistry, and the advances in medicine would have been impossible without this conception of nursing. It is not strange that surgery, pediatrics and preventive medicine did not develop until nursing had progressed. Only rudimentary traces of these specialties had existed prior to this era; they could not function without skilled nursing. Specific therapy, and especially general treatment and physiotherapy require the best possible nursing. "The laying on of hands," when done intelligently, still produces beneficial results. As the late Dr. Francis W. Peabody once wrote: "The secret of the care of the patient is caring for the patient"[7]—that is, being personally interested in the patient as a human being and not merely as the seat of a definite disease[8].

Fig. 5. Florence Nightingale and her nurses at Claydon, England, in 1867 (From a photograph in the possession of the Nightingale Training School, St. Thomas's Hospital, London)[4].

The other side of the picture also must be mentioned. Just as the advances of nursing in the primitive, renaissance, and modern periods enabled medicine to progress, so in the age of pharmacy the over-expansion of hospitals beyond the limits of the trained sisterhoods caused medicine to reach a low ebb. Will our modern expansion of hospitals, some of which have inadequate training schoools for nurses, stop medical progress? With this consideration in mind, should not the medical profession become more vitally interested in nursing education? Many nursing procedures such as bathing and feeding infants, giving enemas, etc. should be, and sometimes are, taught to medical students by nurses, and some purely medical techniques are learned by nurses; but that does not mean that doctors are being made nurses or vice versa. Nursing education and medical education, though inherently different, both seek the same end—namely, the care, comfort, and well-being of the sick—, and anything which hampers one is deleterious to the other.

7. Peabody, F. W.: Doctor and Patient, New York, The Macmillan Co., 1930, 95 pp.
8. Oliver, J. R.: Personal communication.

In reactivation of arrested tuberculosis, pregnancy and birth are relatively unimportant when compared with work and worry and the loss of sleep caring for a colicky baby. Lewis J. Moorman, M.D., Trans. of Nat. Tuber. Assn., 1941.

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APRIL, 1943

THE NATIONAL CONFERENCE ON PLANNING FOR WAR AND POST WAR MEDICAL SERVICES

On Monday, March 15, there was held in New York a most important all-day meeting, known as the National Conference on Planning for War and Post War Medical Services. It was under the auspices of the Carlos Finlay Institute of the Americas, with the cooperation of the American Medical Association, the American College of Physicians, the American College of Surgeons, the American Drug Manufacturers Association, the American Hospital Association, the American Pharmaceutical Manufacturing Association, the American Pharmaceutical Association, the American Surgical Trade Association, the Wholesale Surgical Trade Association, and the National Physicians' Committee for the Extension of Medical Service.

The meeting was attended by approximately eight hundred physicians and leaders in allied medical industries. The scope of the meeting may be realized from the program, which is to be found in the Bulletin Board. The papers, with discussions, are soon to be published in the *Journal of the American Medical Association*, and most of them will repay careful reading. Here an attempt will be made to give only general impressions.

In this conference, for the first time, representatives of the medical profession and of the allied manufacturing organizations met to discuss their common problems. So many questions of mutual concern have arisen as a result of the world conflict that it was quite fitting that these groups should meet around a common council table. It was the consensus of virtually all present that the meeting accomplished a vast amount of good. Those who attended went away with a much clearer idea of the problems to be faced immediately, as well as in the more distant future, and with the feeling that all groups represented will work together in much closer harmony as a result of the meeting.

The conference had no legislative or executive power, and hence no motions or resolutions of any kind were introduced; but considering the wide variety of topics discussed, there seemed to be rather remarkable unanimity among the audience.

The chief impressions that at least one observer carried away with him were:

1. The nature of medical practice will be changed as a result of the war. It will be necessary for us to brush up on our knowledge of some diseases regarded as peculiar to the tropics, and on others which we thought were virtually obsolete. Malaria, the dysenteries, plague, typhus fever, and yellow fever are among the diseases which will assume greatly increased importance. Influenza may or may not play the villain's role it did in the first World War.

2. The shortening of the educational process, including medical education, may be permanent; this remains to be seen.

3. The United States and her allies will be militarized long after the actual cessation of hostilities; this will mean that large numbers of doctors must be kept in the armed forces. Those in civilian practice may have to surrender some, if not much, of their former independence and submit to some form of government control. Certainly,

greater activity of public health departments may be expected.

4. In world rehabilitation, the medical profession will be expected to play an important part; how important remains to be seen. The Red Cross is the logical agency to take the lead in distributing relief to the world.

5. Plans should and doubtless will be made to forestall the tremendous waste of medical and surgical supplies left over at the close of the war. Many of these will be needed by the Red Cross in the work of rehabilitation; the hospitals will need to replenish their depleted stocks; and various other outlets for surplus materials can be found.

6. The task of planning for war and post war medical services is so gigantic and each of the many groups now functioning is so engrossed with its own problems that it seems urgently necessary to have a single agency or committee to coordinate the various medical and allied advisory groups associated with official and semi-official agencies in the great task of winning the war and of preparing for its aftermath.

* * * *

MILITARY MEDICINE

Confronted with the prospect of a long and exhausting war, which must inevitably strain the financial resources of the country to the breaking point, the Army and Navy have embarked upon a costly scheme of medical education. It is proposed that the government shall supervise the education of our future physicians, paying the complete cost with the tax-payers' money.

This proposal will arouse in rational minds, unaffected by the hysteria of war, and not indoctrinated with the political theory of "spend and elect", certain vital questions.

1. From what source has the demand originated for government financing of medical education? Certainly not from responsible medical authorities, for there is an abundance of student material available at no cost whatsoever to the tax-payer. Every decent medical school is flooded with applications for admission, and parents have never been in a better financial position to pay for the medical education of their sons.

2. Why should certain young men be sent to the firing line by the Draft Boards while others receive a long and valuable education at the expense of the very tax-payers whose sons are suffering and dying on the fields of battle? Is this Democracy or is it a pernicious form of Bureaucracy?

3. Does the scheme proposed by the government assure to the armed forces a more certain supply of well-trained physicians? Obviously not. Under present arrangements every medical student is in the Reserve Corps, subject to orders on the completion of his training. Nothing is gained by enlisting students in the Army or Navy, unless it is considered highly desirable that they have fifty dollars a month to spend on movies, beer and other pleasant relaxations. As to the *quality* of training under the two systems, no man who can think without sweating could possibly believe that government controlled medical education would offer one single advantage over the well-tried system now in operation.

And yet, so far have we gone along the road of governmental dictation, that the proposed scheme, non-sensical and wasteful as it is, will almost surely be adopted. In conversation recently a highly placed member of the Senate Appropriations Committee said that the armed forces had at their disposal enough funds, which had been granted to them under the plea that war conditions made it undesirable to break down appropriations into specific proposals, to enable them to expend the hundred million dollars a year which their plan would cost. Perhaps we shall have to seek some consolation from the dictum that "War is Hell", both on the battle field and on the home front—not forgetting Dr. Samuel Johnson's observation that "patriotism is the last refuge of a scoundrel."

* * * *

DR. FONSO B. WATKINS

The news that Dr. Fonso B. Watkins had fallen on sleep was no surprise to his medical friends who had seen him within the past year. It was obvious to the most superficial observer that the Grim Reaper had placed his mark upon him. He himself was too keen a clinician to have failed to know that his days were numbered; but he did not slacken his pace until the very end. It would have been easy for him to avoid the harrowing experience of the "investigation" of his beloved institution last year, simply by stating the obvious truth that he was too

sick to go through with it; but like a good soldier and a brave leader, he never once asked pity for himself.

Dr. Watkins was not one who made numerous friends; he was too reserved—perhaps too shy—for that. Those who were honored by his friendship, however, he grappled to his soul with hoops of steel. He did not seek the limelight, preferring to work quietly and steadily for the improvement of the great hospital entrusted to him. One evidence of his vision may be given: Among the chief criticisms brought out in the hospital investigation was the lack of outdoor courts for the patients; yet Dr. Watkins was going ahead as rapidly as possible with the preparation of just such courts for the patients' recreation.

It is quite possible—even probable—that during this past year, Dr. Watkins may have read with understanding the autobiography of Hans Zinsser, written while its author was himself facing the inevitable end of leukemia. If so, he probably applied to himself part of Zinsser's last sonnet:

Now is death merciful. He calls me hence
Gently, with friendly soothing of my fears
Of ugly age and feeble impotence
And cruel disintegration of slow years.
Nor does he leap upon me unaware
Like some wild beast that hungers for its prey,
But gives me kindly warning to prepare:
Before I go, to kiss your tears away.[1]

1. Reprinted from Zinsser, Hans: As I Remember Him, Boston, Little, Brown & Company, 1940, p. 441.

* * * *

INVALID DIETS AND FOOD RATIONING

Of interest to all who are concerned with diets for invalids is Ration Order 13, issued by the Office of Price Administration under date of February 9, 1943. This order covers all canned, dried, and frozen fruits and vegetables. Article II, Section 2.5 of the order reads as follows:

"Consumers who need more processed foods because of illness may apply for more points. (a) Any consumer whose health requires that he have more processed foods than he can get with War Ration Book Two, may apply for additional points. The application must be made, on OPA Form R-315, by the consumer himself or by someone acting for him, and may be made in person or by mail. The application can be made only to the board for the place where the consumer lives. He must submit with his application a written statement of a licensed or registered physician or surgeon, showing why he must have more processed foods, the amounts and types he needs during the next two months, and why he cannot use unrationed foods instead.

(b) If the board finds that his health depends upon his getting more processed foods, and that he cannot use or cannot get unrationed foods, it shall issue to him one or more certificates for the number of points necessary to get the additional processed foods he needs during the next two months."

The application form referred to above, OPA Form R-315, is apt to be somewhat confusing to patients. It is titled "Sugar Special Purpose Application" and was developed primarily to meet the need for home canning. It is being used temporarily, until a more adequate form can be gotten out.

It is anticipated that the procedure indicated in Section 2.5 above may be changed somewhat in the future, in which case due notice will be provided.

* * * *

AN INSPIRING REPORT

Under the date of March 17, a letter from Dr. Hubert B. Haywood, Chairman of the Legislative Committee of the State Medical Society, recounts the activities of that committee. It is indeed inspiring. Every bit of legislation that would have been detrimental to the interests of the medical profession, and to the public welfare, was defeated. The necessary steps were taken to set up a Central Board of Directors for the State institutions for mental disease, and to provide for increased appropriations to care for their patients.

Dr. Haywood had the whole-hearted cooperation of President Donnell Cobb, and of the other members of the committee, but he deserves great commendation for his wise generalship. The record of his committee reminds one of the schoolboy who, after spelling every word of a hard lesson correctly, was rewarded by his teacher with "Pretty good, Johnny"—to which he replied, "Pretty good, hell! It's perfect!"

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Release: A Release executed by the injured party and based on a valuable consideration is a complete defense to an action for damages for the injuries.

This is a case which was instituted to recover damages for personal injuries resulting from an automobile collision and to vacate and annul a release which had been procured allegedly by fraud.

On January 28, 1940, four automobiles were proceeding along a highway. Snow had been removed from the hard surface portion of the highway and was banked on the shoulders of the road. The traveled portion of the road was covered by a thin coating of ice, which was melting.

The plaintiff and her husband and child were riding on the back seat of the third car. The defendant was driving the fourth car. The front car attempted to turn into a filling station. This caused the second car to stop suddenly. The driver of the third car, seeing the situation, put on brakes and, in order to prevent a collision, cut the front of his car into a snow bank. The defendant driver then skidded into the car occupied by the plaintiff, striking it with such force that she, her husband, and her child were thrown to the foot of the automobile. As a result, the plaintiff's sacro-iliac joint was dislocated, her pelvic bone was fractured, her collar bone and one or more ribs were broken, and other injuries were sustained.

On June 20, 1940, the plaintiff and her husband executed and delivered to agents of the insurance company (one of the defendants) three releases. One, in consideration of $1,975.00, released all claims of the plaintiff; one, in consideration of $25.00, released all claims for injuries to the child; and the third acknowledged payment of medical and other expenses incurred to that date in the sum of $174.00.

On July 12, 1941, the plaintiff instituted this suit. The complaint stated two causes of action. The first was for damages proximately resulting from the alleged negligent manner in which the driver of the automobile operated the car. The second was for damages for the wrongful conduct of the defendants in procuring the execution of the release by the plaintiff, which conduct the plaintiff alleged was pursuant to and in furtherance of a conspiracy entered into between the defendants.

On motion of the defendants made at the conclusion of the evidence for the plaintiff, judgment was entered as of nonsuit, whereupon the plaintiff excepted, and appealed to the Supreme Court.

When this case came on to be considered by the Appellate Court, the Justice writing the opinion referred to the evidence, which showed that the plaintiff made the settlement and signed the release approximately five months after she left the hospital, and that the parties were negotiating over a long period of time. Before signing the release, the plaintiff discussed the matter with her husband, consulted her physician, and, apparently after satisfying herself, attached her signature to the release, which stated definitely that recovery was uncertain. She had an opportunity to read the contract, and should have known all of its contents.

Upon the basis of the above facts, the evidence was insufficient to support the allegations of fraud, and as a consequence the judgment of the lower court was affirmed. The Supreme Court did not take up the matter of damages resulting from the alleged negligent manner in which one of the defendants operated the automobile, inasmuch as the release signed by the plaintiff was found to be without fraud, and was a complete defense to an action for damages against all defendants, including the driver of the car, the owner of the car, the insurance company, and its representative, who obtained the release. (North Carolina Supreme Court Reports, Vol. 222, page 470. Decision rendered Fall Term, 1943.)

MILITARY MEDICINE

Army's 1943 Recruiting Program Will Require 6,900 Physicians

The 1943 recruiting program of the Surgeon General of the Army calls for the commissioning of 6,900 physicians and approximately 3,000 hospital interns and residents, it is reported in **The Journal of the American Medical Association** for March 13 in an outline of the new procedure of processing physicians, dentists and veterinarians for the Army. The program also calls for the commissioning of 4,800 dentists and 900 veterinarians.

Physicians will be procured from the following twenty states and the District of Columbia: California, Colorado, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Vermont and Wisconsin.

The following states have already contributed more physicians to the armed forces than the sum of their 1942 and 1943 quotas and will not be called on to furnish any more physicians, except interns and residents and except special cases for specific position vacancies, during 1943: Alabama, Arizona, Delaware, Georgia, Idaho, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas, West Virginia and Wyoming.

It is stated that at present there will be no procurement of physicians, except interns and residents and in special cases for specific position vacancies, in those states not listed above. There will be no procurement of dentists, except special cases for specific position vacancies, in the following sixteen states: Alabama, Arizona, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia.

At the present time there are no restrictions on the recruiting of veterinarians.

In the instructions issued by the Army it is pointed out that the Surgeon General has discontinued all medical officer recruiting boards and that under the new procurement program no physician, dentist or veterinarian will be commissioned in the armed forces of the United States until he has been declared "available" by the Procurement and Assignment Service of the War Manpower Commission.

In each state the Procurement and Assignment Service has set up three state chairmen; medical, dental and veterinary. Each of these prepares a monthly quota list of physicians, dentists and veterinarians who are apparently suitable and who are available, for commissioning in the Army of the United States. This list is submitted to the central office of the Procurement and Assignment Service which sends a communication inviting such individuals to apply for service with the armed forces. On the reply card enclosed with the invitation the individual states his preference for the Army, Navy

or Medical Department of the Air Forces. These reply cards are sent by the potential applicants to the state chairmen of the Procurement and Assignment Service who in turn submit lists of such potential applicants to the Officer Procurement Service of the Army.

On receipt of such lists the officer procurement district office contacts the potential applicant and arranges for an interview regarding a commission.

Applicants will be requested by the officer procurement district office to complete all papers and take all steps required of them within fourteen days of the date of such request. If this is not complied with, a report thereon will be transmitted by the procurement district office to the state chairman of the Procurement and Assignment Service.

The decision as to the grade and appointment to be recommended for each candidate rests with the Surgeon General, not with the Officer Procurement Service.

War Conference

The American Association of Industrial Physicians and Surgeons,

The American Industrial Hygiene Association, and

The National Conference of Governmental Hygienists—are combining their annual meetings in a four-day "WAR CONFERENCE" at Rochester, New York, May 24-27, 1943. Among the problems to be discussed from a practical standpoint are:

The mass entry of women into industry;

Older-age employees, with their various associated problems; proper placement and employability considerations of the 4F rejectees;

Rehabilitation and proper employment of those already discharged from the military services because of disabling conditions;

Toxic and other hazards from new substances, new processes, and the use of substitute materials;

Absenteeism; fatigue; nutrition;

Effects of long hours; double shifts; two-job workers; overtime; increased industrial accident rates;

Advances in the treatment of illnesses and injuries, and many others.

Physicians and surgeons, hygienists, engineers, nurses, executives—all who are interested in the problems of industrial health and their solution—are invited to attend as many of the sessions as they can arrange for; no registration fee is required.

Medical and Surgical Relief Committee of America

To help the Medical and Surgical Relief Committee of America continue its vital work of providing emergency medical kits to Coast Guard patrol boats and Navy sub-chasers, an urgent appeal for drugs and instruments has been issued by the Committee to surgeons, physicians, and medical supply houses.

Among the items sorely needed to equip the emergency kits are artery clamps, splinter forceps, scalpels, probes, grooved directors, sulfadiazine tablets, sulfadiazine ointment 5%, sulfathiazole tablets, and sterile shaker envelopes of crystalline sulfanilamide. Any other spare medicines or surgical instruments are, of course, equally welcome.

Specially designed for sub-chasers and patrol boats, the medical kit is a small portable case filled with essential medications and emergency instruments. It is complete enough to cover accidents and war casualties until the ship reaches a base hospital.

Please send your contributions to your local medical society or to the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York, N. Y.

BULLETIN BOARD

PRESIDENT'S MESSAGE

Our state, a part of our country, is now part of a world at war. The physicians of our state and our country have no other thought but to do their best towards winning this war.

The physicians of North Carolina have responded to the call of their country with a patriotism of which we will always be proud. As a result of this, there are only five other states in which the doctor-patient ratio is greater than it is with us.

This means harder work and longer hours for all. It also means that we must see to it that we continue to be properly informed about all medical matters so that we may discharge our increasing responsibility efficiently.

It is a strange truth that the science of Medicine makes its greatest advance in time of war. It is the duty of every physician to keep abreast of these advances, to make them always available to the people who have confidence in and who depend upon the physicians to advise them wisely and to treat them well.

The Ninetieth Annual Session of the Medical Society of the State of North Carolina meets next month. Nationally known physicians, recognized leaders in their chosen fields, will speak to us. Our own members will discuss the experience and progress of their own work. Since practically all national scientific meetings have been cancelled, our state meeting will offer the one opportunity to all North Carolina doctors to inform themselves on recent advances.

Dr. Vannevar Bush, President of the Carnegie Institution of Washington, and formerly President of the Massachusetts Institute of Technology, expresses the opinion that "Medical meetings by all means should be continued and with even greater emphasis than before." Even though the American Medical Association meeting will not be held, our own General Fred Rankin, President of the American Medical Association, expressed the hope that state and district meetings would not be cancelled; he stated that we could not afford to stop medical progress, and that it was more necessary than ever that physicians get together for an exchange of views.

An excellent and informative program awaits you, and you owe it to your patients, especially in these times, to keep abreast of present scientific advances. Our meeting in Raleigh should make us all better doctors, more proficient to serve our people. And this is what we want, and what they want.

DONNELL B. COBB, M. D.

SECRETARY'S MESSAGE

NINETIETH ANNUAL SESSION
MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA
RALEIGH
MAY 10, 11 AND 12, 1943

Naturally, War Medicine is an appropriate theme for the coming Ninetieth Session of the Medical Society of the State of North Carolina. The Official Call is for May 10, 11 and 12 at Raleigh, Headquarters—Hotel Sir Walter.

The decision to hold our Annual Session this year, in spite of war conditions, was not made without mature deliberation. Each year for many years I have looked forward to the Annual Sessions of our State Medical Society as a time to renew old acquaintances as well as to gain new knowledge by attending the scientific discussions of our programs. This time our youth with its enthusiasm and our younger men with their strength are in the armed forces. (Commander Max Lapham, USN, Dean of Tulane University School of Medicine, in an address to the American College of Surgeons on March 22, stated that the South is tops at present in its quota of doctors given to the armed forces.) They are being directed by master military minds and are in another sphere of activity. As a profession we have never had such an opportunity to serve our country—and we are doing it well and willingly. The scene on the home front is not so rosy when we stop to consider that 42,000 American physicians have volunteered for military service as of January 1, 1943. Of this number approximately 450 are from our own rank and file in North Carolina. Naturally, those who remain are overworked.

Civilian medical practice in war time resolves itself to eighty hours per week, seven days per week for a considerable number of physicians on the home front. They need some change, some relaxation, as well as to gain brand new information regarding medicine and the war. We are planning timely subjects for our Ninetieth Annual Session—subjects that will be beneficial from every standpoint to the physicians of the state, with newer and better ideas for those of our number who will soon join the armed forces as well as those of us who will remain in civil practice.

As usual, the House of Delegates will meet promptly at 2 o'clock on Monday afternoon, May 10. There are some very important measures to be brought before the governing body at this session; therefore, each member is urged to be present and to be ON TIME.

Also on Monday afternoon at 2 o'clock the Health Officers' Section of the North Carolina Public Health Association will meet. A very interesting and instructive program has been arranged for this meeting. The regular meeting of the North Carolina Public Health Association will be held later in the year.

On Tuesday morning, May 11, at 7:30 o'clock, the Officers' Breakfast for the presidents and secretaries of the various county medical societies will be held. Last year's meeting proved a successful one and, from all that can be learned, was very beneficial to these officers in carrying out their work during the remainder of the year.

The First General Session will be held in the Virginia Dare Ball Room on Tuesday, May 11, at 9:30 a.m. A splendid program has been arranged. Our guest speaker will be Captain Waltman Walters of Corona, California. This session will be closed with a short address by Governor Broughton, whom we all know to be vitally interested in the medical profession and in all phases of health work in North Carolina.

Tuesday afternoon will be devoted to Sectional Meetings which, from the programs received, will be well up to the high standards that have always characterized these sessions.

As a war measure, we have purposely omitted all social functions except the annual President's Night Dinner and Dance. With Paul Ringer as Toastmaster for the Banquet, everyone can rest assured that it will be conducted with grace and with dignity. An address by Professor H. E. Spence of Duke University will be both humorous and inspirational, highly entertaining and, at the same time, interspersed with a serious trend in keeping with the times. I am confident he will keep everyone greatly amused for

the thirty minutes he will devote to our entertainment. Following Prof. Spence's address Wallace, The Magician of Durham, will hold the floor for thirty minutes. I predict that this President's Night Dinner will long be remembered as an evening of merriment and inspiration.

The dance floor will be ready for the President's Ball promptly at 10 o'clock, when Don and Mrs. Cobb, with their usual grace and charm, will lead the way to a very enjoyable conclusion to the one social event of the Ninetieth Annual Session.

On Wednesday morning, May 12, promptly at 9:15 o'clock, we will assemble for the Second General Session, with highly instructive and important topics to be brought before the profession. The guest speaker for this session will be Lt. Col. Charles W. Mayo, son of the late Dr. Charles H. Mayo, who is a worthy successor to the illustrious Mayo brothers of Mayo Clinic fame.

On Wednesday afternoon, other Sectional Meetings will be held.

As usual the Alumni Luncheons will be held on Tuesday and Wednesday, the "in-state" alumni holding their luncheons on Tuesday at 12:30 p.m. and the "out-of-state" alumni holding their luncheons on Wednesday at 12:30 p.m. The North Carolina alumni of the Medical College of Virginia will hold a luncheon this year for the first time, in the Manteo Room of the Sir Walter Hotel at 12:30 on Wednesday. Dr. B. C. Willis of Rocky Mount is in charge of arrangements for this luncheon, and I urge all of you Medical College of Virginia alumni to make your reservations for this luncheon with him at once.

This year we are inaugurating a Press Room in order that advance information may be given regarding essayists and speakers and their topics.

Please make your hotel reservations at once. Raleigh's hotels are as follows:

Hotel Sir Walter
Carolina Hotel
Andrew Johnson Hotel
Raleigh Hotel

In spite of thin tires and gasoline rationing, from all sections the doctors of the state indicate that they are saving their coupons so that they may go to Raleigh to gain further knowledge to aid them here on the home front in their contribution toward the winning of the war.

The Auxiliary to the Medical Society is also restricting its program in so far as social activities are concerned. They will meet for only one day, Tuesday, May 11. Their program is brim-full of interesting and informative talks and discussions. I urge all you wives, if possible, to accompany your husbands to this, our Annual Meeting.

Doctors and Auxiliary Members, remember this is a war-time meeting. Do your part. Share your cars. Come early and stay late. You need this change as well as the inspiration and information you will receive.

—ROSCOE D. MCMILLAN, M.D.

SPECIAL WARNING BULLETIN*

SUBJECT: Epidemic Kerato-Conjunctivitis

Incubation period. Five to ten days.

Clinical Manifestations: The onset may be preceded by a low fever and mild generalized malaise. The local ocular symptoms are merely those of a foreign body or conjunctival irritation. One eye is usually affected first, and in a large percentage of cases the second eye becomes infected within five to eight days. Preauricular and submaxillary glandular involvement with tenderness is common in a high percentage of cases.

Edema of the lids and the conjunctiva, especially the transitional fold, is very frequent. The conjunctiva presents the appearance of a simple purulent conjunctivitis but with little or no formation of pus. Small areas of pseudo-membrane are not infrequent and when removed leave either small white dotted points or some bleeding points. The bulbar conjunctiva becomes edematous early. At this stage, there is some lacrimation and photophobia, but real pain and blepharo-spasm do not appear until the cornea becomes involved.

The percentage of cases in which corneal involvement occurs varies from 50 per cent to 90 per cent. In six to twelve days after the conjunctivitis appears, the cornea becomes involved by the appearance of discrete gray infiltrates that lie in and immediately under the epithelial layer of the cornea. They may be confined to the periphery of the cornea but in a large percentage of cases involve the pupillary area of the cornea directly. These infiltrates are discrete and seldom become complicated by an erosion of the corneal epithelium with resultant staining with fluorescin. The extent of visual impairment depends upon the number of infiltrates and their location.

Clinical Course: The disease is self-limited. In the majority of instances, the conjunctivitis disappears spontaneously in fourteen to eighteen days. The corneal complication may disappear in seven days or may last for many months. The longer they persist the greater the danger of permanent visual impairment.

Laboratory Findings: Scrapings of the conjunctiva show a preponderance of monocytes. Cultures and smears are either negative or show the usual contaminations.

Treatment: There is no specific treatment that has shown a definite influence upon the course of the disease. During the acute stage the eyes should be kept clean with irrigations of boric acid, normal saline, or one to five thousand oxycyanid of mercury. If there is much photophobia, 1 per cent holocaine may be instilled at frequent intervals. Five per cent sulfathiazole ointment has been used, as has 5 per cent solution of sodium sulfathiazole sesquihydrate. For persistent corneal infiltrates, x-ray has seemingly yielded some results.

Period of Infectivity: It is not yet known how long the danger of transmission to others exists. At present for pratical purposes a sufferer from epidemic kerato-conjunctivitis may be allowed to return to work when the active conjunctivitis has disappeared.

Preventive Measures: At present the only preventive measure known is complete isolation of the infected persons. Inasmuch as the disease has been transmitted through medical personnel, the most meticulous asepsis must be insisted upon. Not only must physicians and nurses wash their hands thoroughly with soap and water after each patient, but also eye droppers, solutions, instruments, etc. must be sterilized to prevent infection of non-contaminated persons. The infected individual must be told of the danger of transmission of this disease to others, not only in the plant, but even in the home surroundings. It is suggested that in industrial plants where epidemic kerato-conjunctivitis has made its appearance the following methods of procedure be adopted:

1. In smaller plants with a limited personnel, every individual with a red eye should be stopped at the entrance of the plant and sent direct to the plant physician to determine whether or not epidemic kerato-conjunctivitis is present.

   In larger plants where such a procedure is not possible, supervisors and foremen should be instructed in detail to make rounds immediately when a fresh shift starts, and send any individual with a red eye to the medical office.
2. If the cases are to be treated at the medical department of the plant, a separate room should be set aside for such cases and in that room there must be exercised the most scrupulous asepsis even to washing off the arms of the chairs in which the patients sit. Aside from the aseptic and separate care of the recognized cases of the disease, special cleanliness of the hands of the physician in the general clinic should be maintained, with the use of an effective disinfectant between cases, lest the infection be spread by means of undiagnosed cases, especially those suspected of having foreign bodies in the eye.
3. Every case of epidemic kerato-conjunctivitis should be excluded from the communal facilities of the plant until the inflammation has subsided to the point where the plant physician considers it no longer transmissible.
4. Explicit instructions should be given to every individual regarding the danger of transmission, and emphasizing the decrease in the war effort as a result of the time lost from epidemic kerato-conjunctivitis.
5. The local health authorities should be notified immediately of the existence of individual cases.

* This statement has been prepared jointly by the United States Public Health Service and the Committee on Industrial Ophthalmology of the American Medical Association, for distribution to all physicians.

News Notes From the State Board of Health

Dr. Carl V. Reynolds, State Health Officer, has issued the following statement with regard to the milk situation in North Carolina:

"The recent milk-borne outbreak in the vicinity of Elizabeth City, in which 70 citizens, including soldiers and civilians, became ill with intestinal disorders, furnishes indisputable support of the position taken by the State Board of Health against the pooling of low grade and high grade milk and its distribution under dishonest labels. . . .

"The Public Health control of milk supplies in North Carolina is a function of local units of government, that is, municipalities or counties. The State Board of Health acts in an advisory and consultatory capacity in matters of milk sanitation since there is no legal authority vested in the State Board of Health for the Public Health control of milk. Responsibility for the safety of milk and integrity of labeling and grading of milk rests directly on the shoulders of local officials.

"Since the milk shortage in North Carolina became acute some four months ago, pressure groups—local and national, have endeavored to prevail upon the State Board of Health to recommend that milk regulations be lowered or abrogated whereby low grade, potentially unsafe milk could be legally sold to the public under dishonest labels.

"In considering all aspects of the question, the State Board of Health had hearings and conferences with all groups involved in the milk question—the producing farms, the processing and distributing plants, the Army, the Navy, the U. S. Public Health Service, local and State Health Officers, the Department of Agriculture and others.

"At two official meetings, the State Board of Health refused to lower milk regulations, to recommend the pooling of high and low grade milk, or to abolish the proper labeling and grading of milk and milk products and made the following recommendations:

"'1. Grading and labeling of all milk and milk products **should continue** in accordance with the provisions of your Standard Ordinance.

"'2. **Grade A Pasteurized Milk** and milk products should be maintained as such and in accordance with the provisions of your local milk ordinance, and should **not** be pooled with lower grades of milk.

"'3. In accordance with Sections 8 and 11 of the U. S. Public Health Service Standard Milk Ordinance, lower grades of milk and milk products may be sold during the **emergency provided they are properly labeled in accordance with** the grading and labeling provisions of your local ordinance.'

"The Grange, the Farmers' Federation, and the Blue Ridge Milk Producers Association—representing the milk producing farms have approved the action of the State Board of Health . . .

"There are today in North Carolina certain milk companies receiving and processing known Grade C milk—as shown by survey of the State Board of Health and the U. S. Public Health Service—and selling it as Grade A milk, with or without the knowledge of local milk control officials. One town, namely Chapel Hill, has been threatened with curtailment of sale of milk by a large milk company located in a neighboring city unless the town of Chapel Hill agreed to permit the sale of misbranded milk. The statement made by several milk companies that they cannot keep Grade A milk from being pooled and contaminated with lower grades of milk is absurd and ridiculous. So long as the State Board of Health functions as an advisory and consultatory

body in matters of milk sanitation, it will aggressively oppose the abolishment of grading and labeling of milk, any misbranding thereof, the pooling of Grade A milk with lower grades of milk, or any practice that will endanger the public health . . .

"What is the answer to this milk problem? In view of the intrastate and interstate nature of the present flow of milk, local health departments are apparently unable to cope with the situation adequately. Conflicting milk ordinances in some of the local communities have caused confusion. Loss of personnel in some local health departments has necessarily relaxed vigilance of milk control. Therefore, sufficient legal authority vested in the State Board of Health appears the only answer to the problem and the only means by which epidemics of milk borne outbreaks that are existent, can be forestalled . . .

"May I close by advising the people of North Carolina to ascertain the facts as to their milk supply and be guided accordingly as to its use. We deem it imperative and highly essential that the War Production Board release equipment sufficient in amount to produce a safe milk for the use of its soldiers and civilians."

* * * *

Dr. Carl V. Reynolds, State Health Officer, presided over the meeting of the State and Provincial Health Authorities of North America, held in Washington on March 23. This organization is composed of health officers from all states of the Union and outlying possessions and the provinces of Canada. Dr. Reynolds is the retiring president.

News Notes From the North Carolina Tuberculosis Association

The NTA, through the Committee on Tuberculosis Among Negroes, will again this year make available fellowships in health education at the University of Michigan summer school. They will be open to Negro nurses and educational leaders. Applications should be made to your state association. The fellowship amounts to $200; $100 paid by the NTA, the remainder to be made up between the state and local associations. Write the State Association if you have a likely candidate.

* * * *

To keep tuberculosis control programs in the U.S. constantly adjusted to wartime conditions and to plan for post war control of the disease, a War Emergency Committee has been appointed by the NTA. Dr. J. Burns Amberson, Jr., President of the National Tuberculosis Association is chairman. Committee members are: Dr. Harry S. Mustard, Columbia University; Lt. Col. Esmond R. Long, M.D., in charge of Tuberculosis Section of the Surgeon General, U. S. Army; Dr. Herman E. Hilleboe, in charge of the Tuberculosis Section, U. S. Public Health Service and Dr. Robert G. Patterson, Executive Secretary, Ohio Public Health Association.

* * * *

The 1943 General Assembly enacted a bill to Prevent the Spread of Tuberculosis. This bill reads:

"Section 1. Any person having tuberculosis in the communicable form who, after being instructed by an agent of the county board of health as to precautions necessary to be taken to protect the members of such person's household or the community from becoming infected by tuberculosis communicated by such person, shall wilfully refuse to follow such instructions shall be guilty of a misdemeanor, and, upon conviction thereof, shall be imprisoned in the Prison Department of the North Carolina Sanatorium for a period of 60 days for the first offense, and for a period of 6 months for any subsequent offense.

Section 2. All laws and clauses of laws in conflict with this act are hereby repealed.

Section 3. This Act shall be in full force and effect from and after its ratification."

This Act was ratified on March 1 and should be of great assistance to county health departments and sanatoria as well as tuberculosis associations and committees.

* * * *

The Board of Directors of the Charlotte Woman's Club, which sponsors the tuberculosis work of Mecklenburg county, authorized its Tuberculosis Committee to employ a full time trained executive secretary to carry on its work. Mrs. M. H. Courtney of Charlotte is Chairman of this Committee.

News Notes From the University of North Carolina

The School of Medicine began a new year on March 22, 1943; the first-year class has 51 members and the second-year class has 41 members, making a total enrollment of 92 for the entire school.

* * * *

Dr. H. W. Brown, Dean of the School of Public Health of the University of North Carolina, recently completed a lecture tour of thirty-five medical schools. He lectured several times at each school on various tropical diseases. The lectures were part of a governmental program to educate medical students and interns, who will soon be in the armed services, in tropical medicine. The program was arranged at the request of Army Officials and was sponsored by the National Research Council with the support of the John and Mary R. Markle Foundation.

* * * *

Miss Ruth W. Hay, Professor of Public Health Nursing, School of Public Health, University of North Carolina, attended the Industrial Hygiene Institute for Nurses held at the National Institute of Health at Bethesda, Maryland from March 1-10, 1943. This institute was arranged for public health nursing consultants of the U. S. Public Health Service District offices, industrial nursing consultants of State Health Departments and a few prominent persons in the public health nursing field. The lectures brought out many pertinent facts on diseases and prevention of diseases which are prevalent in war industries.

News Notes From the Bowman Gray School of Medicine of Wake Forest College

The Bowman Gray School of Medicine began its first session as a complete four year school on March 22, 1943, with 32 students in the first senior class, 31 juniors, 46 sophomores, and 51 freshmen, making a total enrollment of 160.

* * * *

Dr. C. C. Carpenter, Dean, attended a conference on the proposed Army-Navy Training Program for medical students in Atlanta, Georgia, on March 15, 1943.

* * * *

Dr. Wingate M. Johnson, Professor of Clinical Medicine, attended the Conference on Planning for War and Post War Medical Services in New York on March 15 and a meeting of the Trustees of the National Physicians' Committee on March 16.

Dr. Tinsley R. Harrison, Professor of Medicine, made several talks on Heart Disease before the Seventh Annual Meeting of the New Orleans Graduate Medical Assembly in New Orleans March 15-18.

* * * *

Dr. George Harrell, Assistant Professor of Medicine, has recently returned from a visit to Columbia, Cornell, Yale, the University of Pennsylvania, the Rockefeller Institute, and the Phipps Institute. This trip was made at the suggestion of the Research Committee of the National Tuberculosis Association for the purpose of showing the research departments of these institutions the work that he has been doing on the application of the lipid fractions of the tubercle bacillus to human beings. This project will be continued, with the assistance of the National Tuberculosis Association and other research workers interested in tuberculosis.

* * * *

Dr. Eugene R. Kellersberger, Secretary of the American Mission to Lepers, will lecture at the medical school on Monday afternoon, May 3, at 3:30 p.m.

Eighth District Medical Society

The spring meeting of the Eighth District Medical Society will be held in the amphitheatre of the Bowman Gray School of Medicine in Winston-Salem on Thursday, April 22. The tentative program for the afternoon session, which will convene at 2:30 p.m., is as follows:

Present Day Status of the Management of Prostatism—Fred K. Garvey, M.D., Bowman Gray School of Medicine, Winston-Salem

Tropical Diseases as a Post-War Problem in North Carolina—Donald S. Martin, M.D., Duke University, Durham

Coronary Thrombosis in Young Soldiers—Lt. John Reece, M.C., Fort Bragg

Acute Hemorrhagic Nephritis in Children—Samuel F. Ravenel, M.D., Greensboro

The Use of Radioactive Salts and the Neutron Ray in Medicine—J. P. Rousseau, M.D., Bowman Gray School of Medicine, Winston-Salem

Clinico-Pathological Conference—Tinsley R. Harrison, M.D., and Robert P. Morehead, M.D., Bowman Gray School of Medicine, Winston-Salem

A dinner meeting will be held at 7 p.m. at the Robert E. Lee Hotel. Dr. Frederic M. Hanes, Professor of Medicine at Duke University, will speak on "Medical Education and Practice During and After the War".

Catawba Valley Medical Society

The Catawba Valley Medical Society met in Lincolnton on March 9 at 7:30 p.m. The following program was presented:

Some Preventive Aspects of Mental Hygiene—Dr. J. W. Vernon, Morganton

Sulfonamides, Their Toxicity and Uses Against Various Organisms—Dr. Yates Palmer, Valdese

Allergy—Dr. G. M. Billings, Morganton

A motion picture on Peptic Ulcer, produced at the Lahey Clinic and shown through the courtesy of John Wyeth and Brother

Case Reports

Forsyth County Medical Society

The Forsyth County Medical Society held its March meeting in Winston-Salem on March 9. Case reports were given by Dr. E. S. Avery and Dr. J. F. Belton, and Dr. H. H. Menzies presented a paper entitled "What Is New".

Regional Meeting of the American College of Physicians

The Regional Meeting of the American College of Physicians for the Middle Atlantic States (including North Carolina) will be held in Washington, D. C. on April 24. The following program will be presented:

Morning Session

10:00 A. M. — 12:30 P. M.
Walter Reed General Hospital
Red Cross Building, Washington, D. C.

Introduction

Shelley U. Marietta, F.A.C.P.
Brigadier General, (MC), U.S.A.
Commanding Officer, Walter Reed General Hospital

Presiding Officer

Wallace M. Yater, F.A.C.P.
General Chairman and Governor for the District of Columbia

1. "Periarteritis Nodosa: Certain Clinical and Roentgenologic Features."
   A. O. Hampton, Major, (MC), U.S.A., Chief of X-Ray Department, and Louis Krause, F.A.C.P., Major, (MC), U.S.A., Assistant Chief, Medical Service, Walter Reed General Hospital.
2. "Clinical Diagnosis of Lumbar Intervertebral Disc Lesions."
   R. Glenwood Spurling, Lt. Col. (MC), U.S.A., Assistant Chief of Surgical Service and Chief of Neurosurgical Section, Walter Reed General Hospital.
3. "Contrast Visualization in the Diagnosis of Intrathoracic Disease."
   George P. Robb, F.A.C.P., Major, (MC), U.S.A., Chief of Cardiovascular Section, Walter Reed General Hospital.
4. "Clinical Report on Primary Atypical Pneumonia."
   Dale C. Stahle, Capt., (MC), U.S.A., Executive Assistant, Medical Service, Walter Reed General Hospital.
5. "Histaminic Cephalalgia."
   Louis E. Lieder, Lt. Col., (MC), U.S.A., Chief of Allergy Clinic, Walter Reed General Hospital.

INTERMISSION

Presiding Officer

Wetherbee Fort, F.A.C.P.
Acting Governor for Maryland

6. "Simplification of Treatment of Diabetes and Diabetic Coma."
   Lazarus L. Pennock, Capt., (MC), U.S.A., Allergy and Diabetes Section, Walter Reed General Hospital.
7. "Malaria in the Army."
   Thomas T. Mackie, F.A.C.P., Lt. Col., (MC), U.S.A., Chief of Division of Tropical Medicine and Parasitology, Army Medical School.
8. "The Typhus Problem."
   Harry Plotz, Col., (MC), U.S.A., Chief of Division of Virus and Rikettsial Diseases, Army Medical School.
9. "Contact Dermatitis."
   Zeno N. Korth, Major, (MC), U.S.A., Chief Dermatologist, Walter Reed General Hospital.

Afternoon Session

2:30 P. M. — 5:00 P. M.
U. S. Naval Hospital
National Naval Medical Center
Bethesda, Md.

Introduction

Charles W. O. Bunker, F.A.C.S.
Rear Admiral, (MC), U.S.N.
Commanding Officer, U. S. Naval
Medical Center

Presiding Officer

J. Edwin Wood, Jr., F.A.C.P.
Acting Governor for Virginia

1. "An Evaluation of the Surgical Treatment of Arterial Hypertension."
   Winchell McKendree Craig, Capt., (MC), U.S.N.R., Chief of the Neurosurgical Service, U. S. Naval Hospital.
2. "Coronary Heart Disease."
   Arthur M. Master, F.A.C.P., Comdr., (MC), U.S.N.R., Consulting Cardiologist, U. S. Naval Medical Center.
3. "Experiments on Underwater Concussion."
   J. C. Greaves, Capt., (MC), U.S.N., Executive Officer, U. S. Naval Medical School.
4. "Practical Considerations in the Use of Blood Derivatives."
   L. R. Newhouser, F.A.C.P., Comdr., (MC), U.S.N., Officer-in-Charge, Blood Plasma Unit, U. S. Naval Medical School.

INTERMISSION

Presiding Officer

Paul F. Whitaker, F.A.C.P.
Governor for North Carolina

5. "The Use of Sulfadiazine in the Treatment of Meningococcus Carriers."
   F. S. Cheever, Lt., (MC), U.S.N.R., Department of Epidemiology, U. S. Naval Medical School.
6. "The Importance of Sub-groups and the Rh Factor in Blood Transfusions."
   J. J. Engelfried, Lt., (MC), U.S.N.R., Department of Clinical Chemistry, U. S. Naval Medical School.

Demonstrations:

"The Electron Microscope."
R. H. Draeger, Comdr., (MC), U.S.N., Executive Officer, Naval Medical Research Institute.

"Blood Derivatives."
L. R. Newhouser, Comdr., (MC), U.S.N.

"Blood Grouping."
J. J. Engelfried, Lt., (MC), U.S.N.R.

In the evening a dinner will be held at the Statler Hotel, with Dr Wallace M. Yater acting as toastmaster. Selected addresses will be given by distinguished guests.

International College of Surgeons To Meet in June

The Fourth International Assembly of the International College of Surgeons will be held on June 14, 15 and 16 at the Waldorf Astoria Hotel in New York City, it is announced by Dr. Fred H. Albee, International President. The program will be devoted to war surgery and rehabilitation.

Delegations made up of prominent surgeons from the United Nations in addition to those from other countries are expected to attend. The United Nations representatives will give outstanding examples of the progress being made in war surgery and rehabilitation under battle conditions by their respective countries.

Eminent surgeons in Government military and civilian executive offices have voiced approval of the Assembly, which also has the cooperation of the Latin American Chapters of the International College of Surgeons.

National Conference on Planning For War and Post War Medical Services

The National Conference on Planning for War and Post War Medical Services was held under the auspices of the Carlos Finlay Institute of the Americas in New York City on March 15. The following program was presented:

Morning Session

James E. Paullin, M.D., Presiding
President, American College of Physicians
and President-Elect, American Medical Association

WAR AND THE MIGRATION OF TROPICAL DISEASES—Thomas T. Mackie, M.D., Lt. Col. Medical Corps and Executive Officer, Tropical and Military Medicine, Army Medical School, Washington, D. C.

EPIDEMIOLOGY OF INFLUENZA—Thomas Francis, Jr., M.D., Prof. Dept. of Epidemiology, University of Michigan School of Public Health, Ann Arbor, Mich.

MALARIA—A WORLD MENACE—Lowell T. Coggeshall, M.D., University of Michigan School of Public Health, Ann Arbor, Mich.

NUTRITIONAL DISEASES AS A POSTWAR PROBLEM—John B. Youmans. M.D., Assoc. Prof. Med. Vanderbilt University School of Medicine, Vanderbilt University Hospital, Nashville, Tenn.

Afternoon Session

Brigadier General Fred Rankin,
M.C. U.S.A., Presiding
President, American Medical Association

POSTWAR NEEDS FOR MEDICAL AND OTHER TRAINED PERSONNEL — Edward C. Elliott, Ph.D., LL.D., Pres. Purdue University, Manpower Commission, Washington, D. C.

POSTWAR CHANNELING OF DRUGS AND MEDICAL SUPPLIES—C. F. Shook, M.D., Col. Medical Corps, U. S. Army, Washington, D. C.

TRENDS IN SCIENTIFIC RESEARCH — A. R. Dochez, Rockefeller Institute for Medical Research.

Evening Session

Dinner

INTRODUCTION OF DISTINGUISHED GUESTS —Mr. John G. Searle, President of American Drug Manufacturers Association, introducing Mr. Basil O'Connor, Toastmaster

TOASTMASTER—Mr. Basil O'Connor, President of the Carlos Finlay Institute of the Americas and President of the National Foundation for Infantile Paralysis, Inc.

THE HEALTH PROBLEMS OF THE AMERICAS —Mr. Nelson A. Rockefeller, Co-ordinator of Inter-American Affairs, Washington, D. C.

HEALTH—A WORLD PROBLEM—Mr. Frederick P. Keppel, Director Equitable Life Assurance Society of U. S. Guaranty Trust Co., New York, N.Y.

THE PLACE OF THE AMERICAN RED CROSS IN MEDICAL REHABILITATION—Mr. Norman Davis, American Red Cross, Washington, D. C.

AMERICAN MEDICINE'S CONTRIBUTION TO THE POSTWAR WORLD—Morris Fishbein, M.D., Editor of the Journal of the American Medical Association, Chicago, Ill.

NEWS NOTE

Dr. Raymond S. Crispell has recently been promoted from Lieutenant-Commander to Commander in the Medical Corps of the U. S. Navy. Commander Crispell has been on active duty in the U. S. Navy with a leave of absence from the Duke University Medical School since June 15, 1941. He is serving as the head of Neuropsychiatry of the Medical Department of the U. S. Naval Air Training Center at Pensacola and as Professor of Neuropsychiatry at the School of Aviation Medicine, the only Naval school qualifying Naval Medical Officers as medical examiners in aviation medicine and as flight surgeons.

AUXILIARY

PLANS FOR STATE CONVENTION

The Wake County Auxiliary extends to each and every member of the Auxiliary to the Medical Society of the State of North Carolina a most cordial invitation to attend the Twenty-First Annual Session of the State Auxiliary in Raleigh on May 10, 11, and 12.

The members of the Wake County Auxiliary wish every lady who comes to the Convention to know that we are very happy to see her and to renew our friendship. However, because of OPA regulations in regard to gas and food rationing, it was deemed necessary to limit our activities to one day of business. We have, therefore, arranged our program for Tuesday, May 11, and hope that it will be a happy day for all those who attend. May the wives of the doctors of North Carolina demonstrate to the public their willingness to aid the government in its efforts to hasten the end of the war, and at the same time enjoy the true fellowship which is possible only in sharing experiences together.

A warm welcome awaits every one who may attend.

Tentative plans for the Convention, May 10-12, follow:

TWENTY-FIRST ANNUAL SESSION OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Officers

President.....Mrs. R. A. Moore, Winston-Salem
President-Elect.....Mrs. K. B. Pace, Greenville
First Vice President and Chairman of Organization.....Mrs. Sidney Smith, Raleigh
Second Vice President and Chairman of McCain Bed.....Mrs. Charles Gay, Charlotte
Third Vice President and Chairman of Stevens Bed.....Mrs. J. L. Reeves, Canton
Fourth Vice President and Chairman of Loan Fund.....Mrs. A. H. Elliot, Wilmington
Chairman of Past Presidents —Mrs. P. P. McCain, Sanatorium
Corresponding Secretary Mrs. R. L. McMillan, Winston-Salem
Recording Secretary..Mrs. James Vernon, Morganton
Advisory Board Chairman —Mrs. P. P. McCain, Sanatorium
N. C. Councilor to Southern Medical —Mrs. Clyde Hedrick, Lenoir
Treasurer.....Mrs. E. C. Judd, Raleigh

Councilors, 1942-1943

First District.....Mrs. Z. B. Owens, Elizabeth City
Second District.....Mrs. O. A. Kafer, New Bern
Third District.....Mrs. D. M. Royal, Salemburg
Fourth District.....Mrs. C. F. Strosnider, Goldsboro
Fifth District.....Mrs. A. L. O'Briant, Raeford
Sixth District.....Mrs. P. G. Fox, Raleigh
Seventh District....Mrs. G. Aubrey Hawes, Charlotte
Eighth District..Mrs. Robt. W. Mathews, Greensboro
Ninth District —Mrs. Alfred A. Kent, Jr., Granite Falls
Tenth District.....Mrs. John T. Saunders, Asheville

Standing Committees, 1942-1943

Program.....Mrs. Joseph A. Elliott, Charlotte
Research.....Mrs. John B. Ray, Leaksville
Memorial.....Mrs. Vernon Lassiter, Winston-Salem
Hygeia.....Mrs. W. G. Byerly, Lenoir
Press and Publicity.....Mrs. Verne Caviness, Raleigh
Public Relations —Mrs. Wingate Johnson, Winston-Salem
Scrapbook.....Mrs. Ben Royal, Morehead City
Legislative.....Mrs. Rigdon Dees, Greensboro
Bulletin.....Mrs. Ben Kendall, Shelby
Historian.....Mrs. Roy Hege, Winston-Salem
Exhibits.....Mrs. C. B. Davis, Wilmington
Jane Todd Crawford Memorial —Mrs. Harry Winkler, Charlotte
National Defense.....Mrs. John Reece, Fayetteville
Doctor's Day.....Mrs. R. S. McGeachy, New Bern
Nominations.....Mrs. J. Buren Sidbury, Wilmington

PROGRAM

HEADQUARTERS: Sir Walter Hotel

Monday, May 10

1:00-6:00 p.m.—Registration Sir Walter Hotel

Tuesday, May 11

10:30 a.m.—Executive Board Meeting, Carolina Hotel
*1:00 p.m.—Luncheon, Carolina Hotel (Fee $1.25)
2:00 p.m.—Annual State Meeting, Carolina Hotel
Mrs. R. A. Moore, Winston-Salem, President, presiding
7:00 p.m.—Joint Banquet With Medical Society
10:00 p.m.—Annual Medical Society Ball

* Please register for this event.

PROGRAM

Annual State Meeting
Tuesday, May 11, 1943, at 2 p.m.
Mrs. R. A. Moore, President, presiding

Call to Order, Mrs. R. A. Moore.....Winston-Salem

Invocation, Mrs. Vernon Lassiter.....Winston-Salem

Memorial Service

Reports of Officers:

President, Mrs. Moore

First Vice President and State Chairman of Organization, Mrs. Sidney Smith.....Raleigh

Second Vice President and Chairman of McCain Bed, Mrs. Charles Gay.....Charlotte

Third Vice President and Chairman of Stevens Bed, Mrs. J. L. Reeves.....Canton

Fourth Vice President and Chairman of Student Loan Fund
Mrs. A. H. Elliott.....Wilmington

Treasurer, Mrs. E. C. Judd.....Raleigh

Chairman of Past Presidents, Mrs. P. P. McCain.....Sanatorium

Chairman of Advisory Board, Dr. P. P. McCain.....Sanatorium

Recording Secretary, Mrs. R. L. McMillan.....Winston-Salem

Introduction of Chairmen of Standing Committees

Introduction of Presidents of County Medical Auxiliaries

Reports:

Councilor for Southern Medical Auxiliary
Mrs. Clyde R. Hedrick.....Lenoir

Delegate to National Auxiliary
Mrs. R. L. McMillan.....Winston-Salem

Courtesy Committee

Greetings from the Medical Society of the State of North Carolina,
Dr. Donnell B. Cobb, President.....Goldsboro

Unfinished Business

New Business

Report of the Nominating Committee, Mrs. J. Buren Sidbury, Chairman.....Wilmington

Election and Installation of Officers, Mrs. P. P. McCain, Presiding

Inaugural Remarks, Mrs. K. B. Pace.....Greenville

Announcements

Adjournment

Rules and Procedure

1. Register on arrival. Present 1942-1943 membership card or pay $1.00 registration fee, and receive badge.
2. Wear badge to all functions.
3. Please register promptly for luncheon.
4. Members of the Hospitality Committee will be in the lobby of Sir Walter Hotel and the Carolina Hotel to greet incoming guests and give information.
5. Members of the Guide Committee will be in the lobby of the Sir Water Hotel to assist guests in finding their way to the Carolina Hotel.

Auxiliary General Chairman of Convention
Mrs. Verne S. Caviness

Convention Committees

Hospitality: Mrs. C. E. Flowers, Chairman
Mrs. G. S. Cooper, Co-Chairman, Sir Walter Hotel
Mrs. A. C. Campbell, Co-Chairman, Carolina Hotel
Mrs. Hubert Royster, Mrs. J. R. Rogers, Mrs. Z. M. Caviness, Mrs. G. S. Coleman, Mrs. J. B. Wright, Mrs. C. B. Wilkerson, Mrs. James Watson, Mrs. H. A. Thompson, Mrs. Hubert Haywood, Mrs. J. S. Buffaloe, Mrs. J. M. Judd, Mrs. T. D. Kitchin, Mrs. G. S. Barbee, Mrs. O. L. Ray, Mrs. Paul Neal, Mrs. A. S. Root, Mrs. Louis West, Mrs. R. W. Wilkerson, Jr., Mrs. A. R. Weathers.

Luncheon: Mrs. C. P. Eldridge, Chairman
Mrs. Frank Powers, Co-Chairman
Mrs. V. M. Hicks, Mrs. M. D. Hill, Mrs. H. G. Turner, Mrs. C. R. Bugg, Mrs. A. C. Bulla, Mrs. B. J. Lawrence, Mrs. W. S. Cozart, Mrs. George Mackie, Mrs. J. R. Hester, Mrs. R. P. Noble, Mrs. J. S. Mitchiner.

Board Meeting: Mrs. P. G. Fox, Chairman
Mrs. I. M. Procter, Mrs. J. S. Crumpler, Mrs. O. S. Goodwin, Mrs. O. E. Finch.

Annual Meeting: Mrs. Sidney Smith, Chairman
Mrs. M. R. Gibson, Co-Chairman
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Registration: Mrs. W. G. Cheve, Chairman
Mrs. R. E. Fox, Co-Chairman
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Mrs. A. C. Broughton, Mrs. Roger Wall, Mrs. K. L. Dickinson, Mrs. R. T. Stimpson, Mrs. W. B. Dewar, Mrs. N. H. McLeod, Mrs. J. J. Combs, Mrs. J. P. Hunter, Mrs. M. J. Carson, Mrs. Robert Young.

Employers should recognize that workers who have old, arrested and clinically non-significant tuberculosis scars in their lungs present almost as little risk as the non-tuberculous workers. In some instances, old experienced key workers have been discharged. following the disclosure of such lung scars by plant x-ray surveys. This practice, we are all agreed is unsound—medically and economically wasteful.

Employees who have fallen ill with tuberculosis and are successfully treated should be returned to their old jobs under medical supervision when those jobs are suitable and when medical opinion finds the employee capable of full-time work. Louis E. Stiltzbach, M.D., The Milbank Quarterly, Jan., 1943.

BOOK REVIEWS

The Management of Fractures, Dislocations, and Sprains. By John Albert Key, B.S., M.D., Clinical Professor of Orthopedic Surgery, Washington University School of Medicine; Associate Surgeon. Barnes, Children's, and Jewish Hospitals; and H. Earle Conwell, M.D., F.A.C.S., Orthopaedic Surgeon to the Tennessee Coal, Iron, and Railroad Company; Chairman of the Committee on Fractures and Traumatic Surgery of the American Academy of Orthopaedic Surgeons. Edition 3. 1303 pages. Price, $12.50. St. Louis: The C. V. Mosby Company, 1942.

The third edition by these well known and able authors covers the subjects of fractures, sprains and dislocations thoroughly. The subject matter is presented in a practical manner. Individual opinions are expressed concerning certain phases of treatment, but various other methods in vogue are also recognized.

The volume is well illustrated with numerous plates. The chapters on first aid and automobile accidents are particularly worth while. The chapter on complications of fractures is thorough and gives a very definite idea of the conditions we may encounter in the treatment of fractures.

This book is not just another volume on the familiar subjects. It is rather comprehensive for the student, but it is adequate for practitioners interested in the subject, including the specialist. It presents every type of injury or disability one is likely to encounter in this type of work.

The Principles and Practice of War Surgery. With Reference to the Biological Method of the Treatment of War Wounds and Fractures. By J. Trueta, M.D., Formerly Director of Surgery, General Hospital of Calalonia, University of Barcelona; Acting Surgeon-in-Charge Accident Service, Radcliffe Infirmary, Oxford, England. With an Introduction by O. H. Wangensteen. 441 pp. with 144 text illustrations. St. Louis: The C. V. Mosby Co., 1943.

The sugical treatment of wounds and fractures has received its greatest impetus from studies made on war casualties. The present conflict has already revolutionized many of our concepts of traumatic surgery and allowed trial of new procedures with remarkable success. During the Spanish uprising which ushered in the present war, Dr. Trueta first applied his methods, which by now have received world-wide acclaim. In this book he describes in detail from a novel and refreshing viewpoint the principles and practice of war surgery. He elaborates the five essentials of treatment: (1) promptness, (2) cleansing of the wound, (3) excision of the wound, (4) provision of drainage and (5) immobilization in a plaster-of-Paris cast. These five essentials comprise the so-called Trueta method, which has already led to almost unbelievable improvement in the surgery of war casualties. Not only should this interestingly written book be read by every military surgeon and by those treating war casualties, but every practicing surgeon should become acquainted with the views and methods outlined herein, for they include surgical principles applicable in everyday practice.

Clinical Diagnosis by Laboratory Methods. By James Campbell Todd, Ph.B., M.D., Late Professor of Clinical Pathology, University of Colorado, School of Medicine; and Arthur Hawley Sanford, A.M., M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation) Head of Division on Clinical Laboratories, Mayo Clinic. Tenth Edition, Thoroughly Revised. 911 pages with 380 illustrations, 32 in colors. Price, $6.00. Philadelphia and London: W. B. Saunders Company, 1943.

The appearance of this classic text in its tenth edition is eloquent evidence of its well deserved popularity. The present edition has kept pace with all the advances in the field and fills admirably the needs of teachers, students, medical technologists, and practicing physicians. Among the new procedures appearing in the present volume may be mentioned: fluorescent staining of tubercle bacilli; the determination of sulfonamides and sulfones and their identification in urine; the Quick prothrombin test; anaerobic culture of bacteria; and phosphatase determinations. Porphyrinuria, rickettsial and fungus diseases, hemoconcentration, the Rh factor, and other subjects of interest to the clinical pathologist are discussed in adequate detail. There are numerous well-chosen illustrations. The book should not fail to maintain the popularity of the earlier editions and can be recommended without reservation.

Endocrine Therapy in General Practice. By Elmer L. Sevringhaus, M.D., Professor of Medicine, University of Wisconsin. Edition 4. 243 pages, with 49 illustrations. Price, $2.75. Chicago: The Year Book Publishers, Inc., 1943.

This is the fourth annual edition of this brief compendium on endocrinology. It summarizes with great brevity the general principles of endocrine therapy. The views expressed are sound and include the most pertinent aspects of the subject. The book can be recommended to the busy practitioner who wishes a brief summary of the subject. The only criticism which may be offered is that over-simplification of an involved subject may lead to an uncritical use of the already much abused endocrines, but to those possessing a knowledge of the fundamentals of the subject, this criticism will not apply.

An Introduction to Biophysics. By Otto Stuhlman, Jr., Ph.D., Professor of Physics, University of North Carolina. 375 pages. Price, $4.00. New York: John Wiley & Sons, Inc., 1943.

This book is intended as a text for students whose primary interests lie in the biological sciences. In its eight concise chapters it considers x-rays, radioactivity, the eye, emission and absorption of biophysically active light, surface action and membranes, nerve conduction, auditory biophysics, and the microscope. The Coolidge x-ray tube, the photometer, the electron microscope, the encephalograph and similar complex apparatus which have acquired a fundamental importance in medicine are described from the standpoint of the physical principles involved in their construction and use. The book is clearly written and should serve admirably its intended purpose of giving the medical reader a knowledge of the fundamental physical principles which he encounters daily.

Fundamentals of Immunology. By William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine; Associate Member, Evans Memorial, Massachusetts Memorial Hospitals, Boston. 446 pages with 45 illustrations. Price, $5.50. New York: Interscience Publishers, Inc., 1943.

This book unquestionably contributes much to the field of immunology and serology. However, much of its content is a bit too "chemical" and lacking in practical application for the average medical student. It presents an excellent chemical approach to immunology, and is a welcomed addition to a subject that is fundamentally chemical, and much of which is not well understood. The excellent bibliography adds greatly to the value of the book.

Although it is difficult to visualize this volume as a textbook for medical students, it should certainly be read and studied by everyone interested in this subject. On the whole it fills the gap between applied immunology and purely fundamental immunology very well.

Creatine and Creatinine Metabolism. By Howard H. Beard, Ph.D., Professor of Biochemistry, Louisiana State University. 376 pages. Price, $4.00. Brooklyn, N. Y.: Chemical Publishing Co., 1942.

Creatine and its anhydride, creatinine, play a fundamental role in the body economy and are intimately associated with various metabolic processes in the body. Their action in the organism is closely linked with carbohydrate metabolism, muscular contraction, nutritional muscular dystrophy, the myopathies and cardiac activity. Dr. Beard in the present monograph has clearly summarized the vast field of biochemistry, dealing with these subjects as they relate to creatine-creatinine metabolism. Although probably beyond the field of interest of the general practitioner, this monograph should prove of interest to biochemists and other investigators in allied fields of medicine.

Textbook of Biochemistry. By Benjamin Harrow, Ph.D., Professor of Chemistry, City College, College of the City of New York. Third Edition, Revised. 537 pages with 118 illustrations. Price, $4.00. Philadelphia and London: W. B. Saunders Company, 1943.

Biochemistry has expanded tremendously during the last two decades. Even the professional chemist cannot be expected to cover the entire field of biochemical interest. It becomes more and more necessary, therefore, in a textbook intended for medical students to limit the matters chosen for discussion and select those of greatest medical importance. Dr. Harrow has succeeded admirably in this task. In a relatively brief space he has accumulated the more essential matters of biochemistry. The style is clear and simple. Illustrations aid in elucidating the text. Figure 95 (p. 458), used to illustrate presumably an endocrine disturbance, is probably a photograph of an achondroplastic dwarf and hence not appropriate for its intended purpose. The book can be highly recommended for students and physicians who wish to acquire a knowledge of the fundamentals of biochemistry, upon which so many concepts of modern medicine are founded.

Military Surgical Manuals Volume V—Burns, Shock, Wound Healing and Vascular Injuries. Prepared under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. 272 pages with 82 illustrations. Price, $2.50. Philadelphia and London: W. B. Saunders Company, 1943.

This brief summary is presented in a very clear, orderly, and concise outline form. It covers all of the modern concepts associated with burns, shock, wound healing and vascular injuries. Discussions of etiology, pathology, and pathologic physiology are all handled in a splendid manner.

It affords to the reader a very valuable ready reference. For remaining concise and yet thorough and for co-ordinating so well many ideas on many topics the authors are to be sincerely congratulated.

Nasal Medication: A Practical Guide. By Noah D. Fabricant, M.D., M.S., Associate in Laryngology, Rhinology and Otology, University of Illinois College of Medicine. Price, $2.50. 122 pages, with 20 illustrations. Baltimore: The Williams and Wilkins Company, 1942.

In this small volume the author has achieved his purpose of providing a practical guide and a reference work on nasal medication for the general practitioner, pediatrician and rhinologist. Each of the ten chapters is well written, and the bibliography is extensive.

Special stress has rightfully been placed on the physiology and histopathology of the mucous membranes of the nose and nasal sinuses.

This book is strongly recommended to all physicians employing nasal medications.

The Answer Is . . . Your Nerves. By Arnold S. Jackson, M.D., F.A.C.S., with a chapter by Rev. Edwin O. Kennedy. 197 pages, illustrated. Price, $2.00. Madison, Wisconsin: Jackson Publications, 1942.

The author of this book is a surgeon who early recognized that many of the patients who came to him for relief from symptoms did not need surgery, but understanding and sympathetic advice. Because he realized that it takes more time than the average doctor has to explain the complaints that he hears over and over from his "nervous" patients, Dr. Jackson conceived the idea of writing in simple language the explanations and the advice oftenest needed. He has done a good job of it. The book is by no means intended to be a treatise on the psychoneuroses or on psychotherapy; but it is sound and safe to put into the hands of one's patients, calling attention to the appropriate chapters.

It should be emphasized, however, that no book can take the place of a sympathetic study of each patient as an individual, and of making each patient think one is interested in him. There is the danger that the physician may rush too hastily through the history and physical examination and pass the book to the patient with instructions to read it for himself. And there is the additional danger, which Dr. Jackson probably realizes, that the patient may read other chapters and develop new ailments. A careful reading of the book leaves this reviewer with the impression that it is as free from this danger as such a book could be, and that it may well be used as a supplement to the physician's own efforts.

Family Treasures. By David D. Whitney, Ph.D., Professor of Zoology, University of Nebraska. 299 pages. Price, $3.50. Lancaster, Pennsylvania: The Jacques Cattell Press, 1942.

The latest of the "Humanizing Science" series is a book on heredity for popular consumption. Dr. Whitney discusses the inheritance of "normal" traits that run in families, such as facial characteristics, hair patterns, etc. The presentation is largely by photographs, more than two hundred being used, which serve to trace certain visible characteristics through several generations of various families. As the author admits, the exact mechanism of inheritance is unknown in many of the traits discussed. The author expresses the hope that this collection will stimulate further study on some of the characteristics described.

The book is written in a simple and interesting style, and may be understood by persons with no special training in science. Statistical treatment of data is avoided and no attempt is made to teach genetics as a science. Such genetic principles as are casually included are sound, however. This book is recommended for the popular audience, but has little medical interest.

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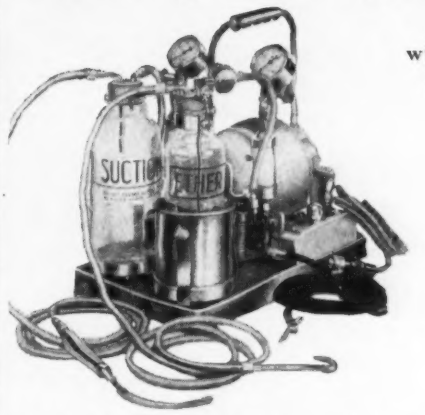

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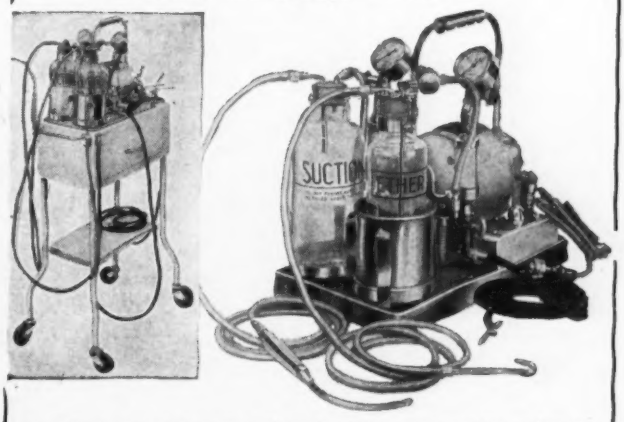

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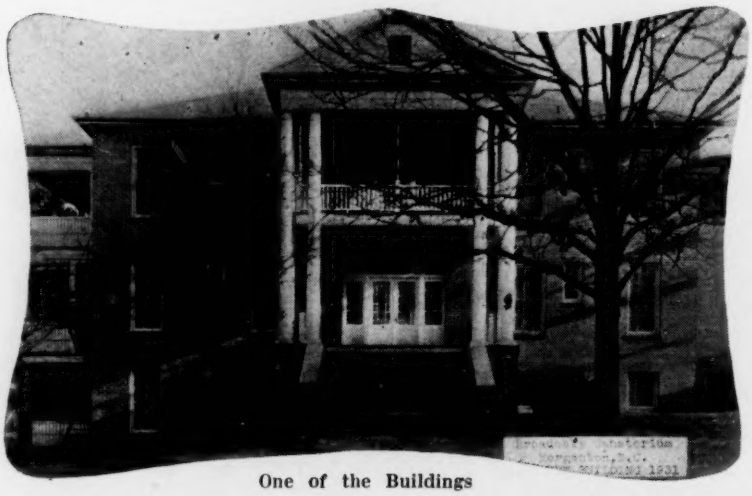

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